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## Situation and Outlook Report

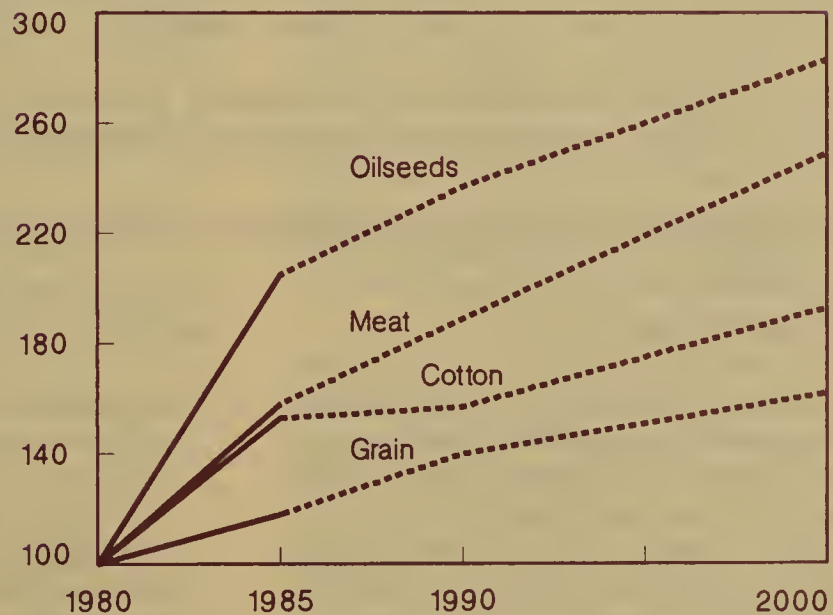
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**Planned Agricultural Production for  
1990 and 2000**

% of 1980



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## SUMMARY

*China's agricultural trade surplus* is expected to grow only slightly in 1986. Export value may rise minimally, while import value remains close to the 1985 level. In 1985, the agricultural trade surplus expanded substantially, as exports of major farm products increased and imports continued to decline. Faced with surpluses of some agricultural products, such as corn and cotton, and an overall balance of trade deficit, China's planners apparently intend to at least maintain an agricultural trade surplus as a source of foreign exchange.

*U.S. farm exports* to China plunged to \$157 million in calendar 1985, down from \$1,505 million in 1982, and the lowest level since 1977. A nearly \$500-million decline in wheat shipments was responsible for the drop. While the unit value of wheat was off and total Chinese wheat imports were down, the major reason for the decline was the loss of U.S. market share. The United States captured only about 8 percent of the Chinese wheat market last year, versus more than 50 percent during the early 1980's. In contrast, growing shipments of breeding animals and cattle hides provided a bright spot for U.S. exporters. U.S. animal and livestock product shipments are expected to equal 1985 levels again this year.

*China's grain output* in 1986 is forecast at just under 400 million tons, 7 million below the 1984 record, but substantially above the 1985 crop. The Chinese Government has re-emphasized grain production by raising floor prices for grain procurement, encouraging large plantings, and once again subsidizing fertilizer sales to producers. Bumper harvests of winter wheat and rapeseed are expected, as well as larger crops of spring wheat, rice, and corn. Production of all oilseed crops, except cottonseed, may be record high.

*Grain output* in 1985 declined 28 million tons from the 1984 record of 407 million. Wheat production fell slightly and rice and coarse grain each dropped more than 10 million tons. The decline generally can be attributed to lower profit margins for grain crops, smaller sown area, reduced use of inputs, particularly fertilizer, and unfavorable

weather, especially in northeastern China. Cotton acreage dropped drastically and output fell to slightly below the 1985 state procurement target of 4.25 million tons. Production of other cash and oilseed crops, except cottonseed, all increased, and peanut and rapeseed outturn were record-large.

*Output of livestock products* grew at a rapid pace in 1985, as elimination of fixed prices for livestock products and ample supplies of feed grains and manufactured feed encouraged farmers to increase production. Emphasis on cows' milk, poultry meat, and egg production, along with rapid expansion in the feed industry, particularly around big cities, sharply increased output of dairy and poultry products. Except for milk, however, output of major livestock products is expected to grow more slowly in 1986 and during the rest of the seventh 5-year plan period (1986-1990).

*In 1979, the Chinese Government* embarked on a revolutionary program to revitalize the rural economy. The program disbanded the commune system and instituted a contract system that provided strong incentives to farm families to raise output, reduce costs, and maximize income. Farm families responded positively and agricultural output and farm incomes rose sharply. However, the successes were accompanied by new problems, such as income inequality, lags in investments, a decline in social services, and environmental deterioration, which China's leaders have just begun to tackle. Just as past changes have dramatically affected domestic production and agricultural trade, so will the current revolution affect future agricultural developments.

*Production of major crops and livestock*, except milk, probably will grow much more slowly during the rest of the century than during 1980-85. Yield increases for crops and improved breeding and feeding of livestock will be the sources of future agricultural growth. Production targets for 1990 and 2000 set by the seventh 5-year plan and the China's "Year 2000 Report" are considered achievable because they are based on much lower growth rates than those of the early 1980's. [Francis C. Tuan (202) 786-1616]



## *Uneven Economic Growth*

The economy grew at a rapid pace in 1985 as real Gross Domestic Product (GDP) increased by over 12 percent, the largest annual increase in recent years. Growth during the year was uneven—most of the year's gains occurred during the first 6 months, and growth slowed sharply during the remainder of 1985 and into early 1986. Output has grown moderately during the first months of 1986, and is likely to pick up later in the year, with GDP registering a somewhat smaller increase than last year.

During 1985, output of industry, construction, and services increased substantially. Overall agricultural output grew by only 3 percent, the smallest increase since 1980. The value of industrial output increased 21 percent for the year. Output of state-owned industry gained 13 percent. The torrid pace of village industrial growth continued as output rose sharply. Village industry now accounts for about 10 percent of the value of industrial output. Construction and services also rose markedly.

Rapid economic growth and changes in economic policy generated substantial strains on the economy. Last year saw the largest jump in prices in the last 30 years. The official retail price index gained 8.8 percent for the year, triple the increase of 1984. Prices in rural markets, which are probably underrepresented in the official index, grew by over 20 percent for the year. Selective decontrol of agricultural prices (see the agricultural policy section) was responsible for the largest share of the increase. Prices of fruits and vegetables rose by about 35 percent and meat, poultry, and egg prices increased 22 percent. Price increases for agricultural goods moderated during the second half of the year after the initial surge as policies changed.

Tight monetary policy and efforts to limit capital spending also contributed to the reduction in inflationary pressures as the year progressed. The banking system tightened credit and increased the monitoring of enterprises' use of funds. Interest rates were also increased. The banking system is now in the midst of a fundamental transition as it becomes an important part of the

macroeconomic control mechanism of a more decentralized economic system.

While the rate of inflation will be down in 1986, the price level will be growing at a rate well in excess of the very low rate of inflation experienced in past years. China's leaders appear to have accepted the need for a gradual escalation of average prices as the country adjusts relative prices and makes the transition to a more rational price system and a greater role for market forces. This transition presents a number of potentially severe political problems.

Real incomes increased in 1985 despite higher prices. In a reversal of the recent pattern, however, urban areas experienced the greatest growth in income, with surveys showing a 10.6-percent gain for the year. Part of the gain came from larger subsidies to workers to offset the impact of higher food prices. Lower crop production limited the gains in rural income.

### Foreign Trade Turned Deficit

Foreign trade surpluses and the accumulation of sizable foreign exchange reserves ended dramatically in 1985. Soaring imports—up 60 percent to \$42.8 billion—coupled with only a 10-percent rise in exports created a record \$15.3-billion trade deficit. The rapid expansion of imports, which actually began in mid-1984, was largely unplanned. Decentralization of foreign trade decisionmaking was primarily responsible for the import surge. Purchases of manufactured goods such as iron and steel more than doubled and transportation equipment imports tripled. Imports of a variety of consumer goods also rose.

Problems on the export side also contributed to the trade deficit. Most export categories grew only slowly, with the notable exception of agricultural products.

The trade deficit was covered in a variety of ways. First, China continued to have a large surplus in the non-trade component of the current account (particularly from tourism, shipping, contract labor, and overseas remittances). In addition, foreign exchange reserves were drawn down, falling from \$16.7 to \$11.9 billion by the end of 1985. Short term borrowing also increased.



Efforts are underway to sharply cut the trade deficit. The Government is trying to strengthen control over foreign exchange and to curtail imports of many commodities. But the early success of these efforts has been limited, as a sizable deficit was again recorded in first-quarter 1986. Part of the problem has been continued larger imports, but the fall in world petroleum prices has also hurt exports; crude oil and refined petroleum products have accounted for a quarter of exports. Import restrictions are likely to be tightened for the rest of the year, and the yuan was devalued by 16 percent in early July. [*Frederic M. Surls (202) 786-1616*]

## AGRICULTURAL TRADE

China's agricultural trade surplus expanded in 1985, as exports of major farm products increased while imports dropped again. The drop in imports was reflected in U.S. agricultural exports to China, which fell to \$157 million in calendar 1985. For the year, the United States was actually a net importer of farm products from China. The growth of China's farm exports will slow in 1986, but little recovery in U.S. shipments is expected.

### *Agricultural Trade Surplus Grows*

Large domestic surpluses of many crops, together with a concerted push to expand exports, led to further growth of agricultural exports in 1985. Exports rose to an estimated 5.5 billion, 21 percent greater than in 1984. Export tonnages grew by an even greater amount; falling world market prices limited the dollar-value gains.

Cereal exports more than doubled in value as corn exports increased sharply (table 1). Much larger shipments of cotton and soybeans added to the gains. Traditional major export categories such as live animals, livestock products, and fruits and vegetables showed little growth, and some actually declined. Rising domestic demand and favorable domestic prices for some commodities, together with a push to increase exports of processed goods rather than raw materials, may have cut into export supplies of some products.

Table 1--Foreign trade indicators

	1983	1984	1985
Million dollars			
Exports			
Total	22,186	25,024	27,559
Agri.	3,833	4,512	5,472
Imports			
Total	21,351	26,744	42,832
Agri.	4,131	2,856	2,308
Balance			
Total	835	(1720)	(15,273)
Agri.	(298)	1,656	3,164
Foreign exchange reserves	14,476	16,705	11,913
Yuan per dollar			
Exchange rate, average	1.9757	2.3200	2.9367

( ) Indicates negative number.

All trade data are on an f.o.b. calendar year basis.

Sources: General Administration of Customs, China's Customs Statistics, various issues; International Monetary Fund, International Financial Statistics, June, 1986, pp. 158-159.

The steady uptrend in farm production has severely cut into China's agricultural imports, which dropped again to \$2.3 billion. Since 1983, agricultural imports have dropped nearly 45 percent (table 1). The decline slowed in 1985, as lower grain and sugar imports were offset by higher purchases in a variety of categories--fruit and vegetables, tobacco and tobacco products, and animal and vegetable oils and fats. While China is a net exporter in these categories, imports are beginning to diversify from the narrow range of basic commodities that were traditionally purchased.

The growth of China's agricultural trade surplus is likely to level off in 1986. The value of exports will show very little growth and could drop. Current USDA projections show somewhat smaller quantities of corn and soybeans being exported, and prices for these commodities will be down sharply. Cotton and rice prices also will fall, although quantities shipped will at least hold with the 1985 level. In both cases, fierce competition on world markets is likely to limit export volumes to less than China's planners would like.



The value of imports in 1986 will probably be close to the 1985 level. Wheat and soybean imports may rise somewhat, but increases in quantity will be more than offset by lower prices. The quantities and value of other imports will increase again, however.

### *Long-Term Plans Target Higher Exports*

Faced with domestic surpluses of products such as corn and a balance of trade deficit, China's planners have apparently targeted an increasing agricultural trade surplus as a source of foreign exchange. The Government apparently intends to maintain large corn and soybean exports, expand cotton shipments, and increase exports of a wide variety of other agricultural products as well. Agricultural imports are not expected to increase greatly.

The export intentions can be inferred from a variety of sources. The new long-term trade agreement with the Soviet Union (1986 to 1990) apparently calls for annual corn and soybean shipments to average 1.5 million and 520,000 tons, respectively, over the life of the agreement. Similar agreements have been signed with several East European countries. Ongoing large corn and soybean shipments to major Asian markets, particularly Japan, also appear planned. In some cases, output from designated counties--so called "export bases"--is targeted for shipment abroad. In the case of cotton, standard baling equipment is being installed and the export infrastructure improved as China aims at a long-term presence in world markets.

These trade objectives, particularly the corn and soybean objectives, may conflict with other domestic goals, and maintaining long-term net exports may not prove feasible. The livestock development program contains very ambitious livestock product and livestock feed production goals. Unless corn and soybean production continues to expand at a rapid pace, the export goals are likely to conflict with the domestic meat production targets. While there is some give in these targets, restricting domestic meat output to permit exports of feedstuffs will mean growing retail price pressures for livestock products, a development the leadership wishes to avoid. So it appears likely that export targets will be scaled back while imports of these products may increase. The 1985/86 purchase of nearly 250,000 tons of soybeans to

meet domestic requirements while maintaining exports (table 16) may be an indication of future trading patterns. A prolonged period of depressed world market prices for agricultural products could also lead to a reexamination of export plans.

### *The Slump in U.S. Exports Continues*

U.S. agricultural exports to China dropped 74 percent in calendar 1985 to \$157 million (table 17). This is the lowest level of shipments since 1977. A \$471-million decline in the value of wheat shipments was responsible. While the unit value of wheat shipments was off by nearly 10 percent and total Chinese wheat imports were down, the major problem was a loss of U.S. market share. The one bright spot for U.S. exporters was growing shipments of live animals and cattle hides.

U.S. imports of Chinese agricultural products increased by only 3 percent to \$197 million in 1985 (Table 18). But with the sharp drop in exports, the United States was actually a net importer of Chinese agricultural goods for the year. Since 1980, the U.S. agricultural trade balance with China has shifted from a surplus of \$2.1 billion to a deficit of \$40 million. Most of the decline was caused by dramatic increases in China's domestic production. But part of it was due to reduced U.S. competitiveness.

There will be little improvement in U.S. exports to China during 1986. The U.S. export forecast shows shipments dropping from \$239 million in fiscal 1985 (October 1984 to September 1985) to less than \$150 million in fiscal 1986. However, rising export volumes in the second half of calendar 1986 as U.S. wheat becomes more competitive in world markets are likely to make calendar year comparisons more favorable. The value of wheat exports in calendar 1986 is likely to be close to that of 1985, with larger shipments offset by lower prices. The value of shipments of other commodities will rise somewhat. [*Frederic M. Surls (202) 786-1616*]

## AGRICULTURAL POLICIES AND PLANS

The pace of agricultural reforms is slowing in 1986. This is a year for digesting the massive changes that have been made in the last 8 years, changes that have seen the abolition of the commune system, the rise of



households as the most important unit in the countryside, a growing role for free markets, explosive growth of production, income, and living standards, and, in 1985, a surge in retail prices of many farm products.

### *Market-oriented Policies*

While the Government intends to maintain a dominant role in the marketing of major commodities such as cotton and grain, it is committed to expanding the role of markets and the price system in directing the production and trade of most farm commodities. Even for grains, the share of output controlled by the Government will decline, and a progressively larger share will be bought and sold at market-determined prices. During 1985, the Government announced three major steps in the move to expand the role of markets.

- o Government purchases of grain at high prices were to be limited to preannounced contract amounts; purchases above these levels would be made only when the Government required additional supplies or when market prices threatened to fall below a low floor price.
- o Cotton purchases were limited to preannounced contract amounts and the Government refused to make additional purchases at any price, forcing farmers to market any above-contract output themselves.
- o Retail and wholesale prices of fruits, vegetables, livestock products, and a range of other commodities were allowed to float, ending the practice of fixed wholesale and retail prices in state markets and tight government controls over free market prices.

The extent to which the restrictions on grain and cotton purchases were enforced is not entirely clear. For example, there are provincial-level reports of changes in policy late in the year to purchase cotton without limit, apparently because farmers in some areas had continued to produce cotton well in excess of state contracts. However, if the official 1985 cotton production figures are correct, the policy was successful in reducing cotton production and area.

Judging from the drop in 1985 grain area, the change in government grain purchase policy had a large impact on incentives for grain production. The new system was a major change from the procurement system of previous years, where the Government had guaranteed to purchase all grain offered for sale at a price that increased as the quantity sold increased. Now farmers were faced with a great deal of price uncertainty and the prospect that, particularly if harvests were good, prices on production over and above the contracted amounts could be very low. Since government purchase guarantees were continued on products such as oilseeds, and price controls were lifted on a number of other crops, it is not surprising that farmers shifted area and inputs to production of other crops. In some cases, farmers gave up grain production and shifted to nonfarm employment.

The response to the removal of price controls on fruit and vegetables and livestock products was dramatic. Prices of these commodities surged, particularly in the first half of the year. The official price indices show prices of fresh vegetables, fruit, and livestock products increasing by 34.5, 35.9, and 22 percent, respectively, during the year. While prices reportedly stabilized during the second half of the year as market supplies increased, some of the stabilization may have come from increased administrative pressures on sellers to restrict price increases.

The price changes and shifts in production during the year illustrate the immense difficulties that are involved in the transition from an economic system run administratively to one in which market forces play an important role. The planners who are trying to guide the transition have very little experience with or idea about how producers will react when controls are lifted or how consumers will react to different price levels. So it is not surprising when the impact of a change turns out to be greater than expected. It should not be surprising to see a substantial amount of confusion, of frequent policy change, and of partial retreat to administrative solutions, as moves to increase the role of market forces have unanticipated consequences. The transition is also made more difficult by the underdeveloped nature of alternative nongovernmental marketing institutions. These are developing rapidly, and the Government is improving and diversifying



its marketing system. But the underdeveloped state of the marketing system makes a rapid transition to a more market-oriented system difficult and increases the variability of prices for the uncontrolled portion.

### *Consolidation During 1986*

No major new policy initiatives appear to be underway during 1986. Instead, the Government is trying to digest the changes that have been made during the last several years and to adjust for some of the unanticipated impacts of the policy changes made in 1985. The two main themes for policy this year are to hold the line on retail prices of farm products and to reverse the decline in grain area that has occurred since the late seventies but was particularly large in 1985.

While the Government considers low returns to grain producers to be the main reason for the drop in grain area, it is not raising grain prices across the board or cutting the price of other crops to increase the relative attractiveness of grain production. Budgetary pressures have made the Government unwilling to increase grain subsidies and it is apparently unwilling to take the risks that would go along with cuts in government prices for crops such as cotton. The only price changes slated for this year are a small increase in the purchase price of wheat and a significant increase in the purchase price of soybeans.

There are two parts to this year's efforts to increase grain production--raising the floor price and increasing the income of grain farmers through local subsidies. The Government has announced that the floor price of grain--the price at which the Government will purchase above-contract amounts--will now be set at the regular contract price rather than the old quota price. This is in effect a 35-percent increase in the floor price and should substantially reduce producers' risk as well as increase the price they can expect for grain. While it increases the Government's budget exposure, the impact may be relatively small since the price on contracted purchases, which will account for the majority of the Government's purchases, remains unchanged.

The second part of the program is a still poorly defined program of local subsidies for

grain farmers. Arguing that incomes of grain farmers are falling behind those of other rural inhabitants, the Government has been urging that a part of local tax revenues or profits from rapidly expanding rural industry be used to subsidize grain farmers. While there has been no general prescription of how to do this or how much to allocate to farmers, a number of different local experiments have been reported in the press. One case involved assigning grain acreage quotas to farmers and then paying bonuses or levying fines depending on whether the quota is over- or underfulfilled. How far this program will go or what form it will take is unclear. But it is potentially a partial reversion to planning and administrative controls over agricultural production, one that has been adopted because the Government is unwilling to accept a market solution--higher prices or budget subsidies--to a perceived problem of insufficient production. [*Frederic M. Surls (202) 786-1616*]

### INPUTS

Firms producing agricultural machinery turned out a record 12 billion yuan worth of machines in 1985, up 20 percent from 1984. The yearend number of small hand-guided tractors rose nearly 16 percent to 3.8 million, but the number of large tractors rose only marginally from 854,000 to 864,000. Tractors are used primarily to transport goods in rural areas. From 1981 to 1986, the area plowed by machine fell almost 16 percent and machine-sown area decreased by more than 19 percent. The number of trucks at yearend jumped 22 percent from 349,000 to 427,000. Peasant ownership of tractors increased again from 68 percent in 1984 to 79 percent. From 1979 to 1984, peasants invested an estimated 30 billion yuan in various kinds of farm machinery.

Chemical fertilizer applications remained about the same as in 1984 at 17.76 million metric tons. Domestic output decreased nearly 10 percent from 14.82 to 13.35 million tons. The overall quality of fertilizers applied, however, improved because higher-quality products were imported and because domestic plants expanded capacity to manufacture much needed compound fertilizers. Chemical fertilizers apparently were more effectively used in 1985 because



Table 2--Major manufactured farm inputs

	Unit	1981	1982	1983	1984	1985
Yearend stocks						
Large-medium tractors	1,000 no.	792	812	841	854	864
Hand tractors	"	2,037	2,287	2,750	3,289	3,810
Rural trucks	1,000 no.	175	206	275	349	727
Power irrig. & drain. equip.	1,000 hp.	74,983	76,697	78,492	78,821	78,500
Machinery production						
Large-medium tractors	1,000 no.	53	40	37	40	45
Hand tractors	"	199	298	498	689	---
Internal combustion engines	1,000 hp.	20,840	22,960	28,990	4,702	---
Rural electric consumption 1/	Mil. kWh.	36,990	39,690	43,520	46,200	51,200
Fertilizer output 2/	1,000 tons	12,390	12,781	13,789	14,602	13,350
Nitrogen	"	9,857	10,219	11,094	12,210	---
Phosphate	"	2,508	2,537	2,666	2,360	---
Potassium	"	26	25	29	(32)	---
Fertilizer applied 2/	1,000 tons	13,349	15,134	16,598	17,731	17,760
Chemical pesticides	"	484	457	331	310	205

( ) Indicates derived.

1/ Not all for agricultural production.

2/ All figures in effective nutrient weight.

Sources: Various annual SSB Communiques; China Stat Yearbook, 1985, pp. 275, 281, 339, and 340.

the *baogan* incentive system provided households with a framework in which it made good economic sense to apply fertilizers to crops that would maximize income.

Domestic fertilizer output for 1986 likely will be slightly above the 1985 level but well below the 1984 record of 14.8 million tons. The seventh 5-year plan (FYP) fertilizer output target for 1990 is 16.3 million tons, which implies an annual average growth rate of about 4.1 percent. Because new plants are still under construction, the growth rate likely will be slower in the initial years, but the rate should pick up at the end of the period. The industry will focus attention on improving the variety and quality of product. Construction of China's largest potash fertilizer plant at Qarhan salt lake, Qaidam basin, Qinghai province, began in May 1986 and is scheduled for completion in 1989. Its designed annual production capacity is 1 million tons.

Domestic chemical pesticide output declined more than 30 percent in 1985 to 205,000 tons. Production declined for the seventh straight year as the industry restructures to manufacture products that are more effective but less harmful to the environment.

There is considerable effort to provide the rural economy with improved production techniques. The Ministry of Agriculture is allocating 34 percent of its total agricultural investment to rural education. The number of students in universities and agricultural colleges increased 78 percent from 60,000 in 1980 to 107,000 in 1985. Moreover, some 23 million local cadres and farmers attended technical evening schools last year. In addition, high school and college graduates are now being assigned employment by government authorities to work in county and township technical centers for 5 years before they can seek further education or a second assignment. These are positive signs that progress is being made, but one also should remember that there are fewer professionals in agriculture than in any other field. For example, there is only one professional for every 10,000 rural residents. Moreover, most of the agricultural professionals live in cities and work in administrative posts.

The disruption in the rural extension system because of the demise of the commune system is now partially being repaired by the formation of some 41,000 township "Agricultural Technical Associations." These



voluntary associations sponsor technical evening schools and demonstrations.

Research and development work underway should improve output. New crop strains are being developed for wheat, rice, corn, soybeans, rapeseed, potato, and forage grasses. Lean-type hog breeds and fine-wool sheep are being developed. Other projects include: use of plastic sheeting to raise crop yields; improvements in food processing machinery and techniques; experiments with machines to increase oxygen supplies in fish ponds; use of cages to raise chickens; development of fruit, potato, and corn processing methods; and improvements in small-scale hydroelectric power generation.

Between 1981 and 1984, irrigated area fell by nearly half a million hectares. This decline, plus weakened control over water systems stemming from the breakup of the commune system, caused serious damage to some water systems. Facilities were not well maintained and some water control property was stolen, damaged, or misused. The Government recognized these serious problems and the State Council in July 1985 passed the "Regulations of Appraisal and Collection of Water Charges and Administration of Water Projects." As these regulations are implemented, administration of water control systems should improve. The new regulations should provide a better source of funds and capacity should expand more rapidly in 1986. Also, rural cadres are once again organizing millions of rural workers to repair canals and build new water control facilities. During 1985, net additions to the stock of power irrigation and drainage equipment increased only by about 3 percent. Some 40 million workers were mobilized in the winter of 1986 to construct dams and reservoirs.

There are about 620,000 kilometers of rural roads that connect most township centers with the rest of the country. About 64 percent of the villages can now be reached by motor vehicle. Most of the rural roads, however, have dirt or gravel surfaces. Only 18 percent of the country's total 915,000 kilometers of roads have paved surfaces, and most of these first class roads are in urban areas. China has about 9 kilometers of road for each 100 square kilometers of territory, or about 12 percent of that of the United States. The countryside also has a deficit of

transportation equipment. There is only one truck for every 3,375 farmers and one tractor for every 200 farmers. A survey of 123,000 farm machinery stations found that hauling activities accounted for 60 percent of all work done by tractors.

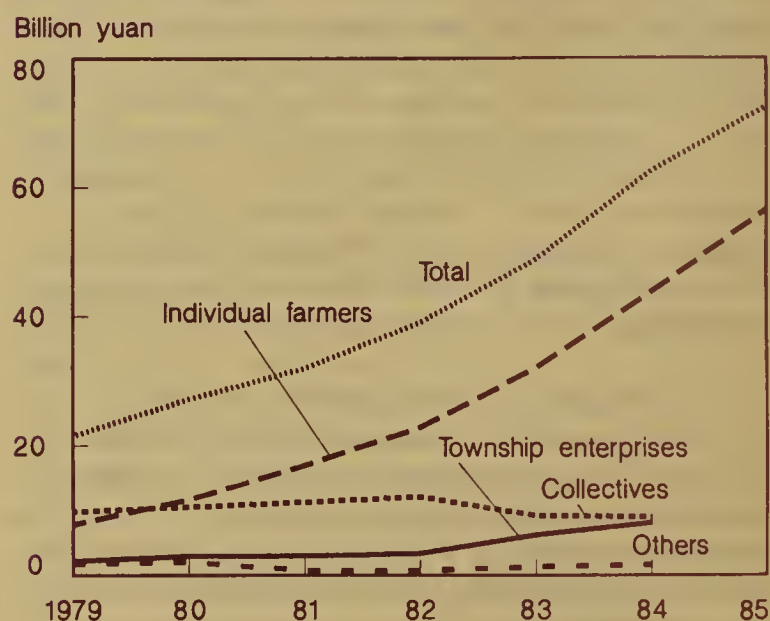
In the seventh FYP (1986-90) the target is to build 85,000 kilometers of roads, including 2,000 kilometers of express highways. The central Government plans to spend 2 billion yuan during 1986-87 to build roads in low-income backward regions. The 2 billion yuan will be given in the form of grain and cotton cloth to compensate rural laborers who construct the roads and bridges.

Rural savings and investment in the sixth FYP (1981-85) rose sharply. China's central bank, the People's Bank of China, supervises the rural banking system, which is composed of the Agricultural Bank of China and the China National Rural Credit Cooperatives. The Agricultural Bank of China lends to rural businesses and farmers and supervises the activities of the credit cooperatives. It is difficult to track the complete rural savings and investment picture in this period but data from rural credit cooperatives outline some of the major trends. Savings in rural credit cooperatives increased 167 percent from 27.2 billion yuan in 1981 to 72.5 billion in 1985 (figure 1).

With rapid increases in rural incomes, it is not surprising that deposits from individuals rose 184 percent from 11.7 billion yuan in 1980

Figure 1

#### Composition of Credit Co-op Deposits





to 56.5 billion in 1985. Income generated in rural township enterprises also rose rapidly and savings deposits from these entities increased by 175 percent from 2.95 billion yuan in 1980 to 8.11 billion in 1984. The financial strength of collective farm production units slipped a bit during this period because of vast changes in rural policy and deposits from these units actually decreased 15 percent.

In 1986, the Government instituted programs to increase rural savings deposits both as a means of soaking up rural purchasing power and as a way to increase the amount of loanable funds. A propaganda campaign was begun to explain to farmers the virtues of putting excess cash in savings deposits. There are some 423,000 credit offices in rural areas and plans are being laid to open new offices and to lengthen business hours so farmers will have more opportunity to make deposits. The Government is also urging credit cooperative workers to improve their service, to expand the variety of savings accounts, and to make it easier for customers to open and close accounts.

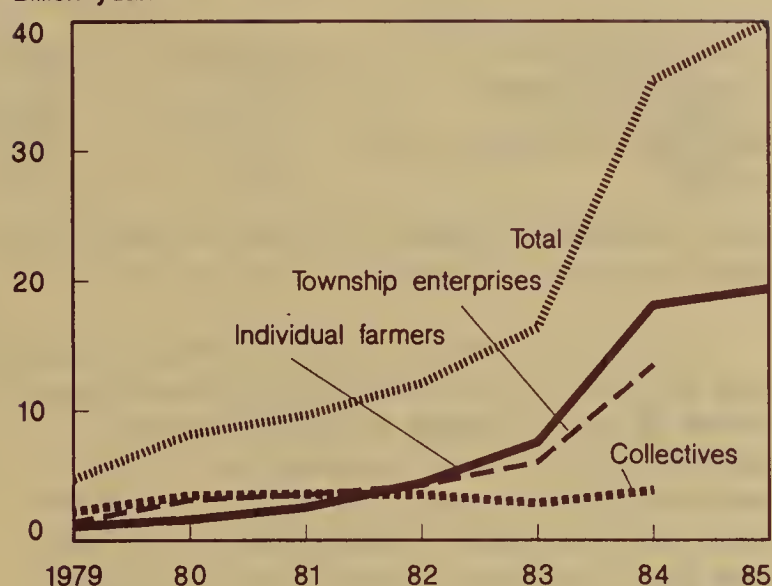
Loans in rural areas in the sixth FYP rose 390 percent from 8.2 billion yuan in 1980 to 40 billion in 1985. With farm households shouldering the primary burden for agricultural production under the *baogan* system, loans to households increased over 1,100 percent while loans to production teams (economic cooperatives) rose only 11 percent. Loans to township enterprises shot up 324 percent from 3.1 billion yuan in 1980 to 13.5 billion in 1984. Complete data for 1985 are not available yet but some preliminary figures suggest the rate of increase for total loans leveled out and increased only 13 percent from 1984 to 1985.

The Government changed its procurement policy in 1985 from purchasing all goods offered for sale to purchasing only those goods it contracted to buy. This policy had an important effect on credit availability in rural areas. Prior to the policy change, the Government financial system provided funds to purchase agricultural products. After the change, the rural banking system was used mainly to increase production and to finance the purchase of farm products. During 1985, grain stations began to compete with farmers and rural industrial enterprises for scarce

Figure 2

### Composition of Credit Co-op Loans

Billion yuan



financial resources. Demand for credit shifted and the increase in supply did not cover the increase in demand for credit and shortages resulted. The Government responded to this credit crisis in 1985 and 1986 in two ways. First, it sought to increase deposits. Second, it sought to limit the extension of loans to critical needs. Loan applications from rural industries that wasted energy were denied. Loans were also reduced to machine tool factories, small iron and steel works, and diesel electric power plants. Priority was given for loans to increase food production, fodder processing, and construction and development of small hydroelectric stations. [Frederick W. Crook (202) 786-1616]

### AGGREGATE AGRICULTURAL SECTOR OUTPUT

The State Statistical Bureau (SSB) introduced a new aggregate measure of rural output in its 1985 report. The new concept is called the gross value of rural society (GVRS) and takes into account the growing diversity of output in rural areas since the reforms began, especially the expansion of industrial output. Gross value of agriculture output (GVAO) traditionally included five subsectors: crops, livestock, fishery, forestry, and sidelines. Output from commune-run enterprises was counted in the gross value of industrial output and was excluded from GVAO. Similar kinds of output, however, from individuals, teams, and brigade enterprises were included in the sideline subsector of GVAO. According to this new measure, the



	1984	1985
	Billion 1985 yuan	
Gross value of output of whole society	1,397.8	1,624.2
Gross value of rural society	535.9	619.5
Gross value of agricultural output	399.1	451.0

rural economy contributed about 38 percent of the total value of output in 1984 and 1985.

The restructuring of the commune system and the rise of new enterprises in rural areas, many of which engage in nonagricultural activities, led to a situation where GVAO expanded rapidly but a sizable portion of the increase was really nonagricultural. Within the next few years, China's statisticians are likely to delete the sideline subsector from GVAO so that GVAO will reflect output of agricultural production. Nonagricultural output in rural areas plus GVAO would equal GVRS. The SSB communique for 1985 defined GVRS to include the gross value of agricultural output (which presumably includes value generated in the sidelines subsector) plus the gross value of output of industrial, construction, transportation, and commerce of rural collectives and individual enterprises.

The gross value of agricultural output in 1985 rose 13 percent to 451 billion yuan. Most of the growth in output, however, came from a large increase in village industry whose value of output rose from 77 billion yuan in 1984 to 93.5 billion in 1985, a 21-percent increase. The value of agricultural output rose only 3 percent. Other components of GVAO for 1985 have not been released yet.

The gross value of output of village and town enterprises (presumably close to what used to be called commune-brigade enterprises) in 1985 expanded 35 percent to 230 billion yuan. In 1985 these enterprises produced 25 percent of the nation's coal, 50 percent of the clothes, and more than 50 percent of building materials. The enterprises that produced this spurt of output had many forms: 1.65 million were collectively owned factories; 3.3 million were individually owned; 467,000 were jointly owned; and there were some 8.1 million private commercial units that included peddlers and small shopowners. Before 1980, commune-brigade enterprises employed 28 million workers, but with the

rapid growth in the past 5 years the number of employees jumped to 60 million, about 17 percent of the rural labor force.

In 1986, government officials are trying to reduce the rate of growth of rural industry. But clearly the growth rate will pick up toward the end of the decade as the gross value of output by 1990 is expected to reach 460 billion yuan and the number of employees is targeted at 100 million, one-third of the rural labor force. The slowdown in 1986 was initiated by planners who want rural cadres and managers to solve some problems before rushing forward again. Some of the most pressing problems include the destruction of irreplaceable farmland by rural enterprises constructing new factories; shortages of credit, trained technicians, and electricity; and poor transportation and communication facilities, which are constraining growth. The paucity of economic information such as data on quantity of goods demanded and input supply sources is also hampering the growth of rural industry.

A State Statistical Bureau rural income and expenditure survey conducted in 1985 placed rural per capita income at 397 yuan, 11.8 percent above 1984. Discounting that increase because of inflation, rural income still rose 8.4 percent in 1985. What accounts for the rise? The *baogan* incentive system, along with other structural reforms, provided a framework within which output of cash crops and animal husbandry rose. Gains from specialization were achieved as farmers were permitted to concentrate their interest, technology, and resources on producing specific goods and services. Farmers were also allowed to earn income by engaging in transportation, construction, catering, and service activities. Moreover, farmers also increased their incomes by investing and working in new rural enterprises that were owned by families, collectively owned by families, or jointly owned by the state, collectives, and individuals.

From 1978 to 1984, rural families saw some dramatic shifts in income distribution. Per capita income rose but there was also a shift in the proportion of the population in various income categories (table 3). In 1978, the 1.6 percent of the population with incomes above 300 yuan had 3.9 percent of the



Table 3--Distribution of rural income, 1978 and 1984

Farm families per capita income	1978		1984	
	Percentage share of population in each income category	Percentage share of income in each income category	Percentage share of population in each income category	Percentage share of income in each income category
Total	100.00	100.00	100.00	100.00
Below 60 yuan	8.69	3.29		
Above 60 yuan	26.68	16.58	0.89	0.19
Above 100 yuan	33.01	31.50	4.19	1.53
Above 150 yuan	17.40	22.40	10.14	5.04
Above 200 yuan	12.62	22.36	30.68	21.58
Above 300 yuan			24.73	23.98
Above 400 yuan			13.60	16.91
Above 500 yuan	1.60	3.87	12.58	21.38
Above 800 yuan			1.99	4.96
Above 1,000 yuan			1.20	4.40

income. In 1984, with dramatically increased incomes and the shift in income distribution brought on by changes in rural policies, 54.1 percent of the population had incomes above 300 yuan and accounted for 71.6 percent of rural income. Given the economic forces at work in rural China, income differentials probably widened further in 1985.

Farmers' production expenditures rose in 1985 because they purchased more inputs than before and because prices of these inputs rose. With the implementation of the new regulations on water use, farmers were required to pay users' fees. Also, the price of diesel fuel, chemical fertilizer, pesticides, machinery, cement, and building materials all increased.

Consumption expenditures also increased more than 20 percent. Prices for many consumer goods rose: fresh vegetables were up 34 percent; meat, poultry, and eggs, 22 percent; grain, 16 percent; books and newspapers, 32 percent; and fuel, 4 percent. Rural expenditures expanded faster for education than for daily consumer goods. The percentage of household expenditures spent on food fell from 69 percent in 1978 to 59 percent in 1984. Expenditures on clothing fell 3 percentage points and outlays for fuel decreased by more than 4 percentage points. Expenditures for housing, however, rose from 2.1 percent in 1978 to 11.7 percent in 1984. The rural population in this period shifted away from consuming coarse grains and potatoes so that total grain consumption

increased only 7 percent during 1978-84. On the other hand, the consumption of fine grains such as wheat and rice rose 71 percent. The same shift from low to high quality goods can be seen in cloth consumption. The consumption of cotton cloth fell 50 percent, while synthetic fiber cloth rose by over 500 percent. The rural population also sharply increased its consumption of meat and eggs by 84 and 130 percent, respectively.

Rural families also have used a portion of their income to purchase consumer durables. For example, between 1978 and 1984 the number of bicycles per household rose 139 percent and the number of radios increased 259 percent (table 4).

In 1985, rural residents constructed 700 million square meters of floor space. Since 1979, rural families have invested almost 30 billion yuan to construct about 3.5 billion square meters of new housing. By the end of 1984 nearly half of all rural families lived in new homes and the living space of 13.6 square meters per person was much higher than the 6.3 square meters for urban residents. In the same period, township governments constructed more than 60 million square meters of space for office, cinemas, and cultural centers annually. Rural water systems have been constructed in the past 6 years so that more than 40 percent of rural residents have access to clean drinking water. However, fewer than 60 million residents or about 15 of every 100 households have tap water in their homes.

Table 4--Stock of consumer durables per 100 families in 1978 and 1984

Item	1978	1984
Bicycles	31	74
Sewing machines	20	43
Radios	17	61
Clocks	52	152
Watches	27	109
TV sets	—	7

Table 5--Consumption of major commodities, 1978 and 1984

		Rural	
	Unit	1978	1984
Grain			
Rough weight	kg	248.00	266.50
Fine grain	kg	122.50	209.00
Vegetables	kg	141.50	140.00
Edible oil	kg	1.97	3.97
Red meat	kg	5.76	10.62
Poultry	kg	.25	.93
Eggs	kg	.80	1.84
Seafood	kg	.84	1.74
Sugar	kg	.73	1.30
Alcoholic beverages	kg	1.22	3.48
Cotton cloth	meters	5.63	2.82
Synthetic fiber cloth	meters	.41	2.48
Shoes	pairs	.32	.57

Planners set the growth rate for agricultural output at 5 percent for 1986. However, the growth rate likely will be larger because output of most crops and animals is forecast to rise with the return of better weather. The value of output of the livestock subsector likely will continue its rapid expansion. Gains also will be made in the forestry and fisheries subsectors. While the rate of increase of rural industry and sideline production may be reduced somewhat as availability of credit is tightened, gains are still likely in that area.

Rural incomes in 1986 are forecast to rise again by at least 5 percent and income inequality likely will increase. Production expenditures probably will continue to increase as farmers purchase more inputs to

expand production. Input prices also probably will rise but at a slower rate in 1986.

To anticipate 1986 demand for production and consumption expenditures, the State Statistical Bureau conducted a survey of rural families' buying intentions in fall 1985. The survey found that demand for electric fans would increase from 1985 purchases by 2.7 times; washing machines, 6.2 times; refrigerators, 5 times; TV sets, 3.4 times; and tape recorders, 6 times. Electric fans and refrigerators were viewed by farmers as both a consumer good and an input because farmers in some parts of the country intend to use fans to winnow chaff from grain, and use refrigerators in catering businesses. [Frederick W. Crook (202) 786-1616]



## AGRICULTURAL PRODUCTION

### Grain

#### *Production Down in 1985*

China's grain production declined for the first time this decade. Total grain output in 1985 reached only 379 million tons, down 28 million tons, or 7 percent from 1984. 1/ Grain area dropped from 112.9 million hectares in 1984 to an estimated 108.2 million. This was the second consecutive year of decrease, and the area is now 12 million hectares below what it was in 1978. Yields fell to 3.5 tons per hectare, down 2.9 percent from 1984. Wheat, rice, and coarse grain production all fell. The State Statistical Bureau reported that more than 40 million hectares of cropland were affected by drought and flood, which suggests that growing conditions in 1985 were the poorest since 1980.

Cotton production dropped to 4.15 million tons, 2.11 million, or 34 percent, below the 1985 record. Total output of oilseeds, on the other hand, rose 2 percent. 2/ A large part of the area shifted out of grain and cotton was planted to oilseeds. Area sown to rapeseed, sunflowerseed, peanuts, and other oilseeds all increased significantly. Cottonseed output decreased because of reduced area but the decrease was more than offset by substantial gains in other oilseeds. Output of sugar, tobacco, jute, tea, fruits, and vegetables all rose because of expanded area and yield increases. These crops showed dramatic increases as farmers found profitable alternatives to maximize their income.

While wheat production in 1985 fell slightly to 85.28 million tons, it still was the second best crop in history. Area sown expanded by 54,000 hectares to an estimated 29.63 million, the highest since 1978. In fact, wheat was the only major grain whose area was not reduced in 1985. This reflects the increasing domestic demand and preference for wheat products such as breads, noodles,

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1/ China's definition of total grain includes wheat, rice, coarse grains, tubers, soybeans, and other miscellaneous grains.

2/ Total oilseed output includes soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed.

cookies, biscuits, and cakes. As wheat consumption continues its substantial growth, wheat area will likely continue to expand, although marginally, for the remainder of the decade. Wheat yields were down slightly from 1984's record to an estimated 2.88 tons per hectare. The overall reduction in yields stemmed from excessive rain in the northeast and from a general 20-percent reduction in fertilizer applications because of increased fertilizer prices. Winter wheat output, which accounts for about 90 percent of the total wheat, was down. All these factors significantly contributed to the overall decline in 1985 wheat yields.

Rice output in 1985 fell 5.5 percent to 168.5 million tons, almost 10 million tons below 1984's record. Area decreased by an estimated 5.4 percent to 31.4 million hectares, the lowest since 1970. Yields, at 5.37 tons per hectare, declined only slightly, about 1 percent from 1984. Lower yields reflect the effects of bad weather. Southern China, where 40 percent of the country's rice is produced, had abnormally dry weather during the early season, and precipitation averaged 25 to 50 percent below normal. Conversely, heavy rains and flooding damaged the late rice crop at the filling stage of development. Policy changes and rising input costs contributed most to the drop in rice production. The production responsibility system adopted in 1978 and later evolved into the household contract system in the early 1980's has given farmers greater freedom to decide the mix of crops to grow. As the price of fertilizer and seed increased and net returns to labor employed in rice production compared with other crops or employment in sideline activities declined, rice production became less attractive than these alternatives.

Coarse grain production in 1985 dropped about 11 million tons, or 12 percent, to 84.5 million. Yields were down 6.1 percent to 3.09 tons per hectare and area decreased about 6 percent. Flooding in the Northeast during late summer heavily damaged production. Total grain output in that region alone declined 12.2 million metric tons, a 25-percent reduction from the previous year. A large portion of this loss was coarse grains.

ERS analysts have formulated a method to re-estimate corn, sorghum, and millet production and area figures for those years in



which China's statisticians did not report data. They also devised a way to re-estimate annual barley and oat production and area figures from 1949 to 1986. Revised data for these grains can be found in table 9. A full explanation of how the estimates were constructed can be found in ERS, International Economics Division staff report, "China's Coarse Grains: Production, Area, and Yield Estimates, 1949-85."

### *Production Likely To Rise in 1986*

Total grain output for 1986 is forecast at just under 400 million tons, 7 million tons below the 1984 record but a great improvement over the 1985 crop. Area is forecast to expand 1.8 million hectares to 110 million. Current grain policies have been shaped to refine the more market-oriented measures introduced in 1984/85, so that growth of grain area and production will keep pace with demand. The Government is projected to maintain acreage at about 110 million hectares through the remainder of the decade and raise the grain production target to 450 million tons by 1990. Planned changes in the price structure such as increases in wheat procurement prices in northern provinces likely will help meet this target. In 1986, the Government again contracted to purchase about 80 million tons of grain and raised the floor price of grain to the same level as the contract price. This increase should significantly reduce the price risks of above-contract grain production. The Government is also reinstituting subsidized fertilizer sales to grain producers who sign grain sale contracts.

Although the impact of these policies is far from certain, winter wheat area has already increased to bring the forecast of total wheat to 30 million hectares. Area of summer harvested grains, largely winter wheat, has risen 1.2 percent or 370,000 hectares. In 1986, double cropping is expected to expand because farmers are being urged to grow more grain but also allowed to grow higher-income crops.

Rice production is projected at 174 million tons in 1986, only a 3.3- percent increase from the depressed 1985 crop. Rice area will likely rise about 2.5 percent from 1985 while yields will probably rise by about 0.7 percent, assuming more favorable

weather. Rising input costs for cultivating rice and the fact that the wheat procurement price was raised while no change was made in the rice procurement price will slow the growth in rice output.

Coarse grain output is forecast to rise 7.5 million tons to 92 million in 1986. Area sown should rebound to slightly above the 1985 level at 27.7 million hectares as farmers respond to pressures to grow more grain and supply more coarse grain for feed. Yields should also increase to about 3.3 tons per hectare as more normal weather patterns return. Breweries were recently given the right to purchase barley directly from farmers. Brewing barley area probably will expand, but the continuing reduction in feed barley plantings will constrain the overall increase. Also, government grain purchasing stations have ceased making contracts to purchase sorghum, millet, and oats.

### *Consumption Undergoing Revolutionary Changes*

China is undergoing a food revolution in the 1980's. Rising farm production and higher incomes have led to major changes in the level and composition of rural consumption. Expenditures on food increased by over 100 percent between 1978 and 1984. As incomes rise, per capita grain consumption continues to change. Of all grains available for human consumption in China, wheat and rice are the most preferred. Between 1978 and 1984, the percentage of rice and wheat in consumers' total grain consumption reportedly increased from 49 to 78 percent. The demand for wheat-based convenience foods is also on the upswing. Cookies, cakes, biscuits, and other confectionaries are becoming less of a luxury item and are now more commonplace.

In January 1985, the Government shortened lunch periods from 2 hours to 1, thereby making it impractical for workers to return home for lunch. As a result, supply of instant noodles and wheat bread cannot keep pace with demand in urban areas. The Government has sought to increase wheat availability through expanded domestic output and imports. Per capita availability increased 38 percent, from about 53 kilograms in 1975 to 68 in 1980. It increased another 24 percent



during 1980–85, from 68 to 87 kilograms. A majority of the increase came from expansion of domestic output.

During 1980–85, milled rice availability increased 13 percent to 112 kilograms per capita. Consumers have become more selective, demanding better quality rice and greater variety. Northern consumers prefer the short-grain variety that is more glutinous and southern consumers prefer the nonglutinous, long-grained rice.

Consumption of coarse grains—corn, sorghum, millet, barley, and oats—is in transition. Corn was, for example, and still is a major food grain. However, since 1978 when the agricultural economic reforms began, incomes and the production of wheat and rice have expanded enough that the proportion of coarse grains used as food has declined and consumption of wheat and rice has risen. Between 1978 and 1983, human consumption of coarse grains and potatoes declined 50 percent, from 126 kilograms to 64 kilograms, while consumption of high-quality grains rose by 60 percent. On the other hand, there has been increased use of coarse grain for animal feed. Feed use of coarse grain rose steadily to over 50 percent of total grains used as feed in 1985. Government officials in Beijing recently announced that 61.7 million metric tons of grain, about 15 percent of the total, was used as feed in 1985, compared with 43.75 million tons in 1978. Plans are to increase grain fed to livestock to about one-fourth of total grain production during the 1990's.

Grain used to manufacture alcoholic beverages is increasing. The demand for sorghum-based hard liquor, such as maotai, and barley-based beer is increasing. By 1990, China's planners forecast that the total output of alcoholic beverages will amount to 3 million tons, a two-fold increase from 1985.

### *Grain Exports Up*

In 1985, China remained a net grain importer only by a small margin as wheat and coarse grain imports fell and as rice exports continued as usual and coarse grain exports declined.

Wheat imports fell to an estimated 6.5 million tons in 1985/86, down from 7.5 million the year before. Demand for wheat remains

strong and assuming that dry weather in the North China Plains will decrease production a bit, imports for 1986/87 are forecast at about 7 million tons. As population and incomes continue to rise, wheat imports are expected to begin to rise gradually through the end of the decade.

Coarse grain imports fell from 197,000 tons in 1983/84 to 138,000 in 1984/85. Corn from Thailand was shipped under a trade agreement and Australia shipped some barley, presumably for the brewing industry. This low level of imports is a far cry from the several million tons shipped a few years ago and underscores the important production, income, and consumption changes that have occurred in China in the past 8 years. Imports for 1985/86 are forecast to rise slightly to 600,000 tons.

Coarse grain exports rose from 450,000 tons in 1983/84 to 5.6 million in 1984/85. Corn accounted for all but 400,000 tons, principally of sorghum and some other miscellaneous grains. Except for exports to South Korea, most coarse grains were shipped under trade agreements with East European countries, the Soviet Union, and Japan. Exports for 1985/86 are forecast to rise to about 6.0 million tons despite reduced total grain output in 1985 and a growing domestic demand for feed grains.

The Almanac of China's Foreign Economic Relations and Trade indicates that 566,000 tons of rice were exported in calendar year 1983, but nearly 1.2 million tons were shipped in 1984. About 1 million tons are forecast to be exported each year for 1985 and 1986. Interestingly, the almanac gave only a partial listing of countries importing rice from China. Major importers over the past few years have been Switzerland, Mexico, Cuba, Hong Kong, and the Philippines.

### *Oilseeds*

#### *Production Increased Slightly*

Oilseed production increased a moderate 2 percent in 1985 to 31.7 million tons. Area expanded by more than 5 percent as the increase in soybean, peanut, rapeseed, and sunflower area more than offset the steep



decline in cotton area (table 10). Available oil rose 14 percent to 4.08 million tons. On a per capita basis, consumer availability of oil rose from 3.5 kilograms to 3.9. Total oilseed meal availability rose to 8.9 million tons, up 6 percent from 1984.

Soybean output reached 10.5 million tons, the best effort since 1949 but short of the 1936 record 11.3 million. Output in 1985 was 8 percent above 1984 primarily because area expanded to an estimated 7.8 million hectares, 7.1 percent above the previous year. Interestingly, the northeast is a major growing region and total grain output there declined by more than 12 million tons. The fact that total soybean output increased suggests that the soybean crop in that region was not excessively damaged last year by heavy summer rains.

Cottonseed output declined sharply because of a planned decrease in cotton. Production fell 34 percent from 10.64 million tons in 1984 to only about 7 million tons in 1985. With huge cotton stocks on hand at the end of 1984, the Government formulated a policy to reduce cotton area by an estimated 1.7 million hectares (see cotton section).

Market demand for peanuts encouraged farmers to expand acreage from 2.4 million hectares in 1984 to 3.5 million in 1985, a record. Peanut production, up 38 percent to 6.7 million tons, posted the largest rise of any oil crop. Production in 1984 was also a record.

Rapeseed output also increased dramatically to a record 5.58 million tons, 33 percent over 1984. Government policies and incentive programs such as unlimited procurement of rapeseed in 1985 stimulated larger sown area. Area expanded 32 percent to a record 4.5 million hectares. Therefore, area expansion contributed almost the entire increase in output.

The sunflowerseed crop hit a peak in 1981 and then declined in 1982-83, but area and production expanded again in 1984 and 1985. Area sown to sunflowerseed last year increased to a record 1.15 million hectares and output rose to a record 1.9 million tons. Again, increased area accounted for all the production gain.

Sesame seed production in 1985 reached a record 650,000 tons. Yields, at 677 kilograms per hectare, were very good compared with those of recent years. Area expanded by 12 percent to 960,000 hectares, but acreage sown in the early 1950's reached over 1.1 million hectares. Other oilseed production, particularly castor beans, also expanded because of larger area and higher yields.

### *Oilseed Production To Continue Growing*

The outlook for oilseed production in 1986 is one of continued growth and expansion with possibly every crop, except cottonseed, reaching record levels of output. The higher procurement prices and new incentive systems will encourage higher yields and continued area expansion. Total oilseed production in 1986 is expected to increase about 7 percent, to a record 33.91 million tons. Total area also is expected to be record high at 23.45 million hectares, about 6 percent above 1985. Area increases will contribute most of the production growth. Total oilseed production is projected to increase continuously, but at a slower pace between 1985 and 1995 because of a healthy growth in demand.

Preliminary estimates put the 1986 soybean crop at a record 11.5 million tons. Procurement price increases and a growing demand for livestock and feed development as well as for exports will push up soybean production, possibly to 14 million tons in 1990. Area will expand, especially in southern and central China. Soybeans are likely to be the fastest growing component of oilseed production.

Cottonseed output is forecast to rise slightly to 7.3 million tons following a sizable but planned reduction in cotton production in 1985. Yield increases are expected to compensate for decreases in sown area. However, cottonseed growth likely will reach a plateau in the coming year because government policy measures limiting cotton production growth will have registered their full impact.

Peanut production is estimated to rise another 5 percent to 7 million tons in 1986. Sown area will expand by an estimated 200,000 hectares. China's efforts to improve peanut crushing and oil pressing, together with



improvement in peanuts used for food and confectionary items, should raise demand and gradually increase peanut production, but at a slower rate than in the recent past.

Rapeseed and sunflowerseed output also is likely to rise in 1986. Rapeseed output is projected at 5.9 million tons, and area sown may expand to a record 4.9 million hectares. Yields will improve slightly, but long-term growth may slow down as varieties are developed that have lower yields but also have lower erucic acid content. Sunflowerseed production is expected to reach 2.2 million tons, roughly 16 percent higher than in 1985. Area is likely to expand to 1.25 million hectares, about 9 percent higher than in 1985.

### *Consumption Pattern Changed*

Rural diets have changed markedly in recent years. While consumption of grain and vegetables, the main staples, have changed very little, consumption of edible oil, livestock products, sugar, and alcoholic beverages is up sharply. On a national scale, per capita availabilities of edible oil in 1985 reached an estimated 3.9 kilograms, compared with only 2 in 1978. Per capita oil availability is expected to rise to 4.2 kilograms in 1986. With about 40 percent of total oilseed production entering commercial channels, much of China's oilseed output is consumed in urban areas. Urban dwellers now consume an estimated 8-10 kilograms per capita per year. The Government provides them 6 rationed kilograms annually at a subsidized price.

As incomes rise, urban and even some rural consumers are shifting their preference from animal fat to vegetable oils. In the cities, the Government ration now represents a declining share of total per capita consumption. Oilseeds are readily available on the free market and prices are moderating. Direct consumption of oilseeds, particularly peanuts and sesame seeds, is also on the increase.

A major portion of the soybean crop is still used to fill food requirements. Soybean oil constitutes another major use of soybeans and oil output increased from 191,000 tons in 1984 to 220,000 tons in 1985. Soybean meal output increased from 1.4 million tons to about 1.6 million in 1985. Feed use of

soybeans is still limited, estimated to be under 10 percent. But there are plans to expand feed and livestock production with mixed and compound feed production projected to reach 50 million tons by 1990 and 100 million tons by the year 2000.

Total rapeseed oil availability expanded from around 1.24 million tons in 1984 to 1.65 million in 1985. Most of the oil is used for human consumption. The rapeseed oil available for food is forecast to increase to over 1.7 million tons in 1986. With the large production rise in 1985, the quantity of crushed peanuts for oil and meal increased from 2.4 million tons in 1984 to an estimated 3.4 million in 1985. Roughly 90 percent of peanut meal, at 1.21 million tons in 1985, was used for feed. Peanut oil, at 807,000 tons, was almost all used for human consumption. Whole peanuts are a popular food in China, mostly consumed at mealtime rather than as snacks. Experiments are underway to find new methods to cook peanuts including baking, frying, boiling, and coating with sugar. With consumers' rising incomes, increasing interest and ability to purchase popular food items, and given government plans to develop peanut butter as an export product, the supply and consumption of peanuts will expand. Peanut oil and meal availabilities for 1986 are projected to increase to more than 900,000 tons and 1.4 million tons, respectively.

Cottonseed oil and meal availabilities declined in 1985 because of reduced cotton output to 609,000 tons and 2.19 million tons, respectively. In 1986 cottonseed oil and meal availabilities are forecast to rise slightly as cotton output increases.

Oil and meal availabilities of sunflowerseed and sesameseed have increased from previous years because of production expansion. Sunflowerseed oil consumption expanded from 255,000 tons in 1984 to 285,000 in 1985, and is projected to jump to about 330,000 tons in 1986. Sunflowerseed meal production in 1985 was estimated at 779,000 tons, of which 90 percent was used as livestock feed. Output in 1986 is estimated to rise to 900,000 tons.

### *Oilseed Exports Down Slightly*

China is likely to remain a net exporter of oilseeds and products until the domestic



livestock industry further expands and demand for feed sharply rises. The level of exports, however, will decline somewhat because domestic demand for edible oil and meal is projected to grow more rapidly than supply. The pace of development in the livestock and feed industries will require major increases in protein meal. Requirements for oilmeals are projected to double by 1995. Oilseed production is expected to rise 27 percent between 1985 and 1995, but that will not be sufficient to keep up with demand, and China could shift from an exporter to an importer of oilseeds and products.

In 1985, China exported 900,000 tons of soybeans, compared with 1.05 million tons in 1984. The major portion went to Japan, the Soviet Union, and Southeast Asia. China also signed a 5-year trade agreement as recently as May 1986 with the Soviet Union and several Eastern European countries for continued exports of corn and soybeans, but 1986 shipments may slow to 850,000 tons. Meantime, China purchased 250,000 tons of U.S. soybeans in 1985 and may buy 200,000 tons in 1986. These imports are presumably for food use only as China's plans for livestock and feed expansion are only beginning to be translated into reality. Given the size of the country, difficulties in transportation, and distribution and storage problems, it will take time to increase the use of soybeans as a feed component. Eventually, demand growth for protein meal will limit exportable supplies and will likely lead to declining soybean and soybean meal exports and possibly a resumption of imports. But the timing of this shift is difficult to predict.

Cottonseed exports have remained at around 150,000 tons for the past 3 years despite the expansion in cotton production, and are expected to remain the same in 1986. Cottonseed meal exports in 1985 dropped to 250,000 tons, compared with an estimated 300,000 tons in 1984, because of drastically reduced cotton production. This export level is projected to remain the same as in 1986. Cottonseed oil exports, on the other hand, are small—around 40,000 tons—and are expected to remain at the same level for the next year or two.

Peanut exports, both shelled and in shell, have averaged 150,000 metric tons in the past 3 marketing years. The major export

destinations are Japan, the Soviet Union, Southeast Asia, and Middle Eastern countries, with some peanuts beginning to enter the Western European markets. Given the strong desire to earn foreign exchange, peanut exports are likely to continue at a steady level. However, quality and difficulty in internal transportation remain chief deterrants to export expansion. [Victoria L. Morton (202) 786-1616]

### Cotton

A major surprise of the State Statistical Bureau (SSB) report was the magnitude of the drop in 1985 cotton production. Despite the decline, 1985 cotton ending stocks remained high. As a result, China is expected to continuously and aggressively promote cotton exports this year and through the rest of the 1980's. Cotton production for the next 5 years will remain around 4.25 million tons a year. For the 1990's, cotton output is projected to resume an annual growth rate of about 2 percent.

### *Sharp Decline in Cotton Output and Area*

Cotton production was expected to be down in 1985 because of government policy, but the SSB's March estimate of 4.15 million tons was a major surprise. Output was 2.11 million tons less than the record 6.26 million harvested the previous year, or a decrease of almost 34 percent. Also, output was substantially lower than the 4.25-million-ton procurement target set by the Government for 1985. Cotton area was estimated at 5.2 million hectares as the end-of-year report announced a drop of 1.7 million hectares. This generated a yield of 798 kg/ha, about a 100-kilogram decrease from the previous year.

Although provincial cotton output statistics of the last few months have tended to support the low reported national cotton output, sown area data for individual provinces are still unavailable. National and provincial reports collected before early October 1985, including those from the media and trip reports by USDA analysts, indicated a cotton area of 6.0 million hectares, well above the 1985 plan of 5.2 million. The pattern of the reporting took a sharp turn after September. First, there were very few national or provincial reports in October or November. Starting in early December, reports began to



indicate success in controlling cotton area and production. The 1985 yearend reports then stated that 1985 cotton output dropped dramatically to 4.35 million tons and that area fell by 1.7 million hectares from the previous year. Finally, the SSB report revised the figure down further to 4.15 million tons. In addition to the dramatic decline in area, officials also blamed poor weather in the North China Plains for low quality. Lower use of fertilizer and other inputs also may have contributed to the lower yields.

### *Consumption Up Slightly, Ending Stocks High*

Because China had made a commitment in 1985 to sell extra cotton for wadding use, cotton consumption in 1985/86 was sharply larger than in 1984/85, despite low demand by the textile industry. According to an article entitled "Strengthen Macroeconomic Regulations of Cotton Supply and Demand," published last September by the *Economics for Agricultural Technology*, a leading agricultural economics journal in China, demand by the textile industry in 1985 alone fell approximately 150,000 tons from 1984. Between 1982 and 1984, cotton used for textiles dropped by 350,000 tons. The decreased use was mainly caused by falling sales of pure-cotton cloth. According to the same source, the mill use of cotton can easily be increased by improving cloth designs and blending methods.

Despite the sharp decline in cotton output, 1985 ending stocks were only marginally lower than the larger stocks of nearly 20 million bales (4.35 million tons) estimated for 1984. This implies that total disappearance of cotton, including mill and wadding use, exports and waste, is now roughly equivalent to the 1985 cotton output.

### *Cotton Exports Up*

Preliminary statistics released from China indicate that the country exported about 350,000 tons of cotton in 1985, up 100,000 from the previous year. China has aggressively promoted cotton exports and will continue to do so this year. Exports for 1986/87 are projected to exceed 2 million bales (450,000 tons), about the same as the

previous marketing year. China will continue to be a major exporter of cotton through the rest of the decade.

Large stocks permit continued export of substantial quantities of cotton. A policy commitment to export has apparently been made by the Government. First, China is planning to set up cotton production bases to produce better quality cotton for exports. Second, with large stocks and the growth of mill consumption restrained by easy availability and low prices of synthetic fabrics and by slower growth of textile exports, continued exports will be possible. However, exportable supplies may drop somewhat in the 1990's, particularly if cotton production grows at only 2 percent annually during the decade as implied by the year 2000 report (see special article "China's Agricultural Production in 1990 and 2000").

Another important reason for the aggressive export promotion is high storage costs. The annual cost for storing a ton of cotton reportedly averages about 475 yuan, roughly one-seventh of the 1984 average cotton procurement price. The cost includes 292 yuan in interest, 72.8 yuan in contractual management fees, and 110 yuan in losses from lowered quality. The high storage cost likely also led the Government to consider lowering cotton prices in the domestic market to increase cotton use for wadding and other purposes.

A major unknown in the supply/demand balance for cotton is the breakdown of production and consumption by grade. The quality of the 1985 cotton crop reportedly was severely affected by unfavorable weather, particularly in northern China. Stocks are believed to be predominately of low quality. If the country is unsuccessful in improving the quality of domestic production, some imports could continue for domestic blending, as has occurred in the last couple of years. Additionally, China's exports will depend on the ability of the world market to absorb lower quality cotton at prices acceptable to China.

### *Slight Increase in Cotton Output Forecast*

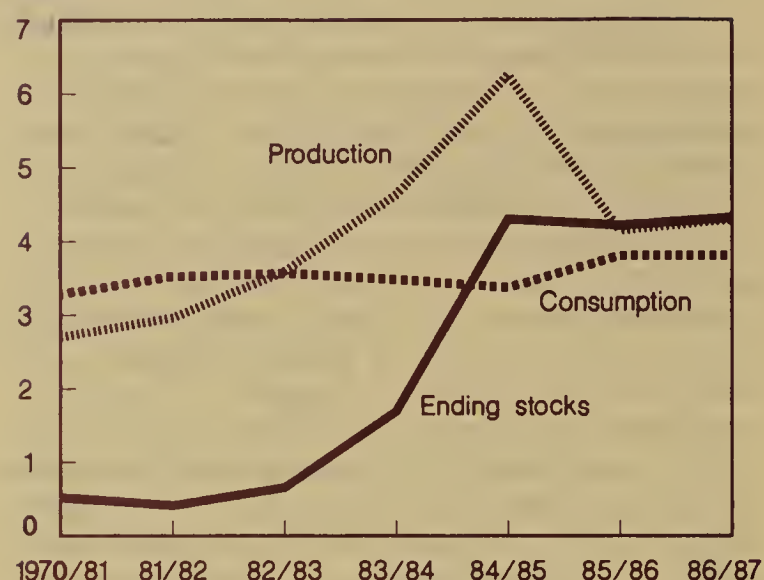
Cotton output in 1986 is expected to grow only about 3 percent to 4.3 million tons, while area will be slightly lower than the estimated



Figure 3

### Cotton Production, Consumption, and Ending Stocks

Million tons



5.2 million hectares for 1985. The government procurement target for 1986 has again been fixed at 4.25 million tons, the same as in 1985. Along with their efforts to increase yields, cotton farmers will also strive to improve the quality of cotton this year to obtain better procurement prices as they sell their crop to the Government.

Production likely will stay around 4.25 million tons a year for the rest of the 1980's. High stocks and improvements in quality will limit cotton yields as well as output. Output is forecast to gradually resume a modest growth, roughly 2 percent a year, throughout the 1990's.

Domestic cotton consumption in 1986 is expected to be about the same as in the previous year. The pace of special sales of cotton for wadding, mainly for bed padding, will likely slow and the decrease in mill consumption should stabilize or even reverse because sales of pure cotton cloth are estimated to be up sharply in 1986 and may continue higher in 1987. [Francis C. Tuan (202) 786-1616]

### Other Crops

#### Sugar Production Up Significantly

Production of sugar crops in 1985 increased to over 60 million tons. Sugarcane output rose 30 percent to almost 51.5 million tons, and sugarbeet outturn increased 7.6 percent from the previous year (table 6).

Table 6—Other agricultural product output

Product	1982	1983	1984	1985
1,000 tons				
Sugar crops	43,594	40,323	47,946	60,378
Sugarcane	36,882	31,141	39,519	51,470
Sugar beet	6,712	9,182	8,284	8,910
Sugar	3,384	3,771	3,740	4,450
Tobacco	2,179	1,381	1,789	1/2,320
Flue-cured	1,848	1,151	1,543	2,075
Tea	397	401	414	440
Jute and hemp	1,060	1,019	1,492	3,403
Silk cocoons	314	340	357	374
Aquatic products	5,155	5,458	6,194	6,969
Rubber	153	172	189	188
Fruit	7,713	9,487	9,845	11,540

1/ USDA estimates.

Sources: China Stat Yearbook, 1983, 1984, and 1985; China Ag Yearbook, 1982, 1983, 1984, and 1985; and the 1985 SSB Communique.

Sugar production was up 19 percent to 4.45 million tons. China now is the world's sixth largest sugar producer with further increases expected. Since 1981, sugar production has increased on average about 320,000 tons annually.

Sugarcane production in 1985 increased in response to favorable prices for cane and policies that permit farmers to produce what is most profitable on the land they lease from economic cooperatives. Reportedly a farmer can gross about 70 yuan more per mu per year raising one crop of cane than raising three crops of rice. This partially explains why cane area increased by 23 percent in 1985. Guangdong is a major sugarcane producing province. In 1985, the province harvested 366,000 hectares, up nearly 95,000 hectares from the previous year. Sugar production in Guangdong reached an estimated 2 million tons in 1985, almost 45 percent of China's total.

Estimated sugar consumption in 1985 was about 5.5 million tons, roughly 5.3 kilogram per person. Imports continued to make up the deficit. In 1985, imports were around 1.9 million tons, up from the 1.23 million a year earlier according to the recently published Customs Statistics from China.

China plans to increase sugar production to 6.0 million tons by 1990 and about 7.5



million by 2000 (see "China's Agricultural Production in 1990 and 2000"). Sugarcane and beet area and production should rise in 1986 but increases will likely be less than recent year-to-year changes because of the renewed emphasis on grain production.

### *Tobacco Output a Record*

The 1985 tobacco output was an estimated record 2.3 million tons. Production of flue-cured tobacco exceeded 2 million tons for the first time in history. The expansion of flue-cured tobacco production from 1.54 million tons in 1984 to 2.08 million in 1985 was well beyond planners' intentions. The major reason for the significant increase was the overall policy that encouraged farmers to grow cash crops, that would result in higher returns. In addition, local jurisdictions that benefit from high tobacco taxes had limited interest in following the specific tobacco policy which, since 1983, called for controlling area while improving crop quality. The China National Tobacco Company reported earlier in 1985 that it could procure only 1.7 to 1.8 million tons in 1985 because of high procurement costs, limited storage, and current cigarette manufacturing capacity. However, a recent government announcement indicated that all tobacco leaf will be procured, but at lower prices for above-contract sales, because of the monopolistic purchases of the Government.

A manager of the National Tobacco Corporation proclaimed, at the national tobacco production meeting held in Beijing at the end of 1985, that the Government had purchased about 1.2 million tons of quality flue-cured tobacco in 1985, 28 percent more than in the previous year. Nevertheless, inadequate production of high quality leaf will still be the major problem facing China's tobacco industry. A new grading system, a simplified version consisting of only 15 grades, has been introduced to encourage farmers to practice good management techniques if they expect good returns from their tobacco leaf. Flue-cured area should be cut back in 1986, mainly by the inexperienced farmers who expanded production in 1985. Also, area is likely to decline in regions that produce poor quality leaf.

### *Jute and Hemp Production Doubled*

The 1985 jute and hemp outturn reached 3.4 million tons, more than double the previous year's 1.5 million. The area sown increased in response to high prices prevailing in the international market in the preceding year. China's domestic demand for jute and hemp is estimated at about 1.5 million tons. Because of excess production, prices of jute and hemp fell 10 to 20 percent from the previous year. Prices also dropped significantly in the international markets. Jute and hemp area is expected to decline in 1986, and so is output. [Francis C. Tuan (202) 786-1616]

### *Livestock*

Livestock production continued to grow at a fast pace in 1985. Elimination of fixed prices for livestock products and ample supplies of feed grains and manufactured feed raised farmers' incentives to increase livestock production. Emphasis on the development of cows' milk, poultry meat, and egg production, along with rapid growth of the feed industry, has sharply increased output of dairy and poultry products, particularly around big cities. However, output of major livestock products, except milk, is expected to grow at a considerably slower pace during the seventh 5-year plan and to grow even more slowly in the 1990's, because of expected slower growth of total grain production.

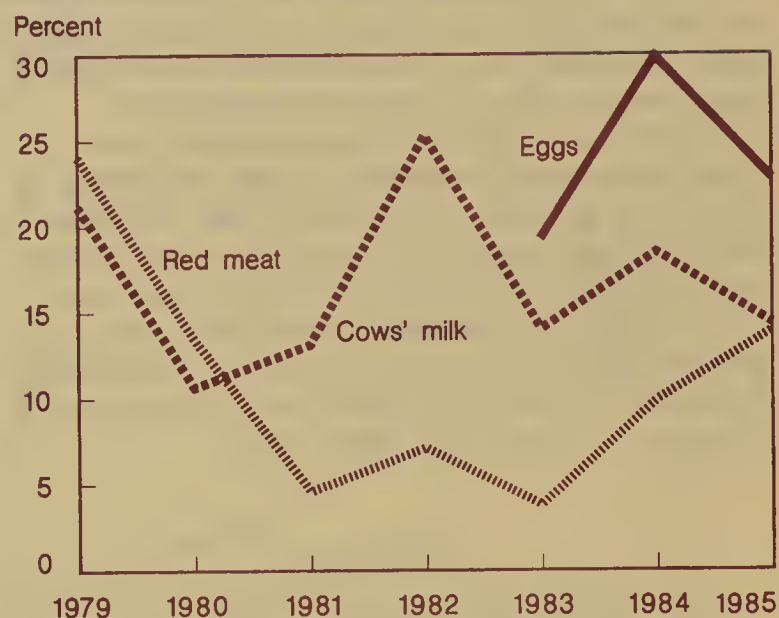
### *Rapid Growth Continued in 1985*

In 1985, production of livestock products continued to expand rapidly, although rates of growth for eggs and milk declined from the previous year (figure 4). Total meat production, including pork, beef, and mutton, grew to 17.55 million tons, up 13.9 percent from the 1984 record (table 14). The expansion in meat output, particularly pork, can be attributed to the increasing availability of feed grains and the elimination of fixed pork prices at the beginning of last year. Record grain output in the previous 2 years, together with the extra 10 million tons of grain allotted by the Government for livestock production, greatly raised feed grains available for livestock production.



Figure 4

### Annual Growth Rates of Major Livestock Products



Pork output, which contributed roughly 94 percent of China's meat output in the past few years, reached about 16.5 million tons. Despite the relatively fast increase in output of lean pork, demand for lean meat has continuously exceeded supply, particularly in big cities.

The yearend hog inventory was up 8 percent in 1985 to 331.5 million head, after remaining around 300 million for several years. Annual slaughter rates advanced from 55 percent in 1981 to nearly 78 percent in 1985. The increased slaughter rates imply that farmers have fed more grain to hogs and, as a result, hogs have become marketable after a shorter feeding period.

Slaughter rates of ruminant animals, including cattle, sheep, and goats, also continued to improve in the last several years. Ruminant meat production expanded steadily even though inventories of sheep and goats dropped again in 1985.

Production of dairy products, particularly cows' milk, again grew significantly in 1985. Cows' milk rose to 2.5 million tons, up more than 14 percent from the previous year and almost double that of 1981. Milk cows totaled around 1.5 million head, compared with only 700,000 in 1981. Roughly 70 percent of China's milk cows are Holsteins and the rest are classified as dual-purpose dairy cattle. Most dairy cattle are raised around medium-size and large cities. Many are kept on state-run dairy farms, although private feeding of dairy cows has been encouraged by

the Government. For instance, in Heilongjiang province, dairy cattle totaled about 250,000 head, and only about 10 to 15 percent were on state farms.

No official statistics are available on poultry meat output, but fragmentary information indicates that it has grown rapidly. Egg production increased remarkably in 1985 to 5.3 million tons, nearly 23 percent above the previous year. China's poultry production, including eggs and meat, has been one of the fastest growing components in the country's livestock sector in recent years. A major reason for the rapid development is the growing recognition of poultry's efficient feed conversion. Steady growth of income, higher procurement prices, rapid development in the feed industry, and shortages of lean pork meat, also have been responsible for the increase in poultry meat and egg output.

Wool output declined slightly in 1985 for the third consecutive year. The factor most often cited for the continued decline is the unprofitability because of low procurement prices for wool and hides. Some provinces such as Heilongjiang and Jiangsu reported that limited pastureland and low pasture yields also have reduced the incentive to raise sheep and goats. Therefore, the 1985 inventory of sheep and goats declined to 156.2 million head, about 1.4 percent below the previous year and down nearly 17 percent from 1981.

### *Livestock Program in Transition*

Despite remarkable progress in the last several years, China's livestock sector has only begun to become more modernized and diversified. Increased production of poultry and dairy products, as well as ruminant meat, will continue to push the livestock sector to become more balanced in terms of types of animal products, reducing the dominance of pork. More importantly, the Government is determined to make livestock production a top priority of the country's agricultural development. First, the Government announced an ambitious plan to raise compound and mixed feed production to 50 million tons by 1990 and 100 to 120 million by the year 2000. Currently, China produces about 15 million tons of compound and mixed feed.



The improvement program of the livestock sector, however, has actually gone beyond the planning stage. In 1985, China's Animal Breeding Stock Import and Export Corporation planned to import 5,000 cattle, thousands of breeding hogs, and about 100,000 chicks from foreign countries, including the United States. The United States alone shipped approximately 1,200 dairy cows, 1,190 pigs, and 100,000 chicks to China last year. At least the same quantity of breeding animals is expected to be sold to China again this year.

China also started to acquire new technology from developed countries, particularly technology related to embryo transplants and feed manufacturing. China has already signed agreements with Canada and Australia covering items such as transfer of livestock embryo transplanting technology and imports of frozen semen. A similar agreement between China and the United States is under negotiation. Other forms of technical assistance have also been set up in the last couple of years; for example, a meat research center in Beijing and dairy projects implemented by the UN's World Food Program in six big Chinese cities.

Other important factors that will help the livestock modernization program include improved knowledge of scientific farm management and micro- and macroeconomic analysis of livestock feeding. These factors have not been emphasized or publicized by the Chinese Government, but they could help the livestock improvement program to find and correct problems related to feeding efficiency, proper location for animal raising, distribution and transportation of products, and balance of supply of and demand for all individual livestock products.

#### *Slower Expansion Expected in 1986*

Livestock production, except milk, will grow much more slowly this year. Meat output, in particular, will be sluggish. For the remainder of the seventh 5-year plan period, average annual gains in livestock output will decline from current level (see special

article). Bumper grain crop harvests for the 3 years prior to 1985 provided the feed grain base needed for rapid livestock sector expansion in 1984 and in 1985. However, a more than 28-million-ton reduction in grain output last year, together with export commitments of coarse grains and soybeans for 1986 and the next 4 years, will inevitably limit the domestic supply of feed grains to livestock feeding, particularly this year.

Red meat output, including pork, beef, and mutton, is expected to increase less than 5 percent this year, compared with about 10 and 14 percent in 1984 and 1985, respectively. Production of pork, the major red meat, will be most affected by the reduced supply of feed grains because of less efficient grain-meat conversion in hogs. The large increases in the hog inventory in 1985, coupled with the expected lower feed grain availability, implies that hog slaughter will grow at a slow rate in 1986. Slaughter rates improved significantly from 62.1 percent in 1980 to 77.9 percent in 1985 (table 14). A small increase in slaughter this year would almost ensure a slower growth in pork output, because the slaughter weight of marketed hogs has increased slowly in the last couple of years. Native hogs tend to produce a greater percent of fatty meat when fed to heavier weights. Consumers, particularly those around big cities, now prefer lean pork. Farmers, therefore, market their hogs after shorter feeding periods than before.

Manufactured feed output will keep growing, likely also at a slower pace, and will provide for the continuous expansion of the poultry and egg subsector around large and medium-sized cities, where state farms and specialized households are the major producers. Milk output should increase about 15 percent this year, similar to the average for the last several years. If the World Food Program, which has already helped six large Chinese cities to increase city milk supplies, expands its dairy project to more urban areas, milk output will grow at a faster pace in the next few years, possibly close to 20 percent per year. [Francis C. Tuan (202) 786-1616]



# DECISIONMAKING IN FARM PRODUCTION UNITS

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**Abstract:** Since 1949, China's leaders have often changed rural institutions to attain national objectives. In 1979, they embarked on a revolutionary program to reorganize farm production units, change rural institutions, and initiate new policies to revitalize the rural economy. The program included disbanding the commune system, instituting a contract system that provided powerful incentives to farm families to raise output, reduce costs, and maximize income. Farm families responded positively, and output and incomes have risen sharply since 1978. But successes also spawned new problems relative to income, investments, social services, and the environment that China's leaders are just beginning to tackle. Past changes have dramatically affected domestic output and agricultural trade. U.S. exporters therefore need to pay close attention to the current revolution and to future changes.

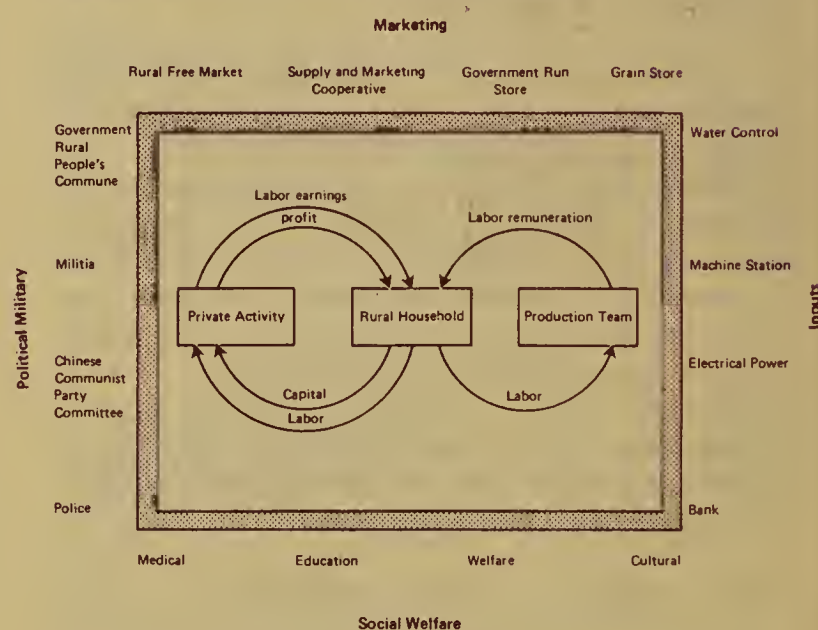
**Keywords:** Farm structure, incentives, communes, township, rural industry, factor markets, product markets, and rural labor force.

## Restructuring the Old System

Before reforms, the primary rural organizational structure was the rural people's commune system composed of four parts; commune-unit, production brigade, production team, and households. Political, administrative, social, economic, and military functions were integrated into the structure of the commune system. Acreage and production targets were sent from Beijing down administrative channels to production teams, which were the primary farm production units and units of account. Government and party leaders had strong mechanisms to control the economic behavior of the semiautonomous production teams. Rural authorities controlled the supply of farm inputs such as fertilizer and machinery and managed the marketing of farm products. Communes were encouraged to become as self-sufficient as possible. Farm households theoretically owned the means of production and received income payments from the collectives (production teams) based on the labor they contributed. Figure 5 summarizes the major institutions in the commune system and the relationships between its parts of the system.

Strengths of the commune system from 1958 to 1978 included the development of a rural medical service and a school system with

Figure 5  
Elements of the Commune System



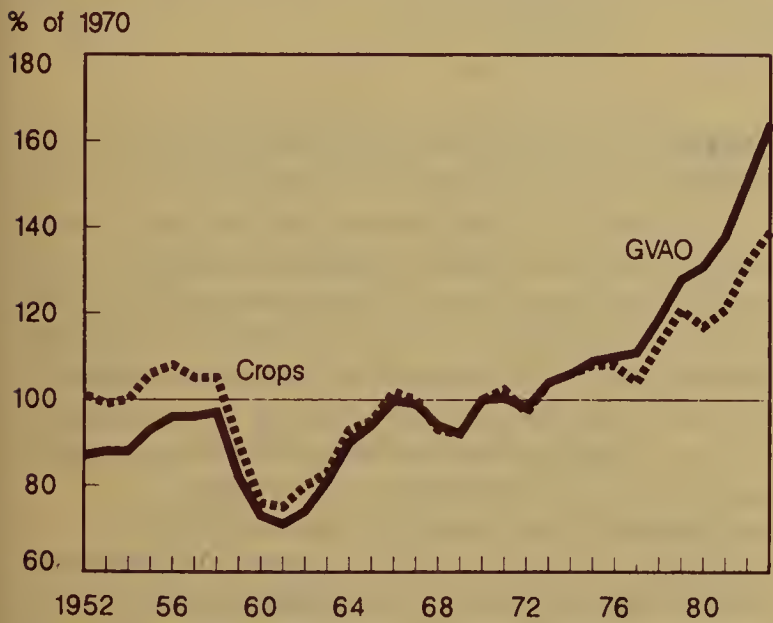
an expanding enrollment of young people. Rural labor was mobilized to build and maintain water control systems and this labor also expanded the rural road system. A rural extension system was established and a wired broadcast system was constructed to convey information. The number of rural credit facilities greatly expanded to provide consumer and production loans. Electrical power was extended to most commune centers and villages. Commune and brigade enterprises expanded rapidly so that by 1978



they employed 10 percent of the rural labor force and generated about 30 percent of the value of output of the commune system. These rural enterprises included coal mining, sand and gravel dredging, brickmaking, processing agricultural products, and manufacturing farm tools. A disaster relief system was developed and a welfare system provided basic necessities for orphans and aging couples without children. Movie theatres, libraries, and sports grounds were constructed to improve the cultural life of rural people. The commune system also developed strong institutions to prevent rural people from moving to urban areas and to maintain security in rural areas.

In 1978–79, China's leaders saw several major weaknesses in the commune system. The integration of politics, government, and economics in one unit gave too much power to commune cadres. Instead of allowing team leaders to make economic decisions based on first hand local information, decisions were made by cadres at the commune-unit level. Dryland crops were planted on wet lands and farm operations frequently were not performed at optimal times. An equally serious weakness was that the commune system stifled incentives and efficiency. There were few material incentives to encourage families to increase output. Production teams were encouraged to fulfill production targets and were limited in their efforts to maximize profit.

Figure 6  
Per Capita GVAO and Crop Production



The combination of planning errors, poor economic decisions, and limited incentives led to sluggish growth rates in agricultural output and to small increases in per capita income. Figure 6 indicates that after 20 years of hard labor and sacrifice, China's farmers on a per capita basis had available to them about the same quantity of crop output as they had in 1957. Likewise, figure 10 indicates that rural per capita income from the collective rose only 1.6 yuan per year from 41.4 yuan in 1958 to 74 yuan in 1978.

In the mid-1960's, farmers were led by party cadres into collectives and communes with the promise that living conditions would improve. Through the years, that often repeated promise fell on an increasingly hostile peasantry who saw that living conditions were not improving rapidly.

After Mao's death in 1976, China's top leaders reviewed the strengths and weaknesses of the commune system. Rather than try to improve the system by allowing limited specialization and decentralized decisionmaking, loosening restrictions on marketing, and instituting production-labor contracts to households to improve incentives, they chose to dismantle the commune system and establish the township-cooperative-household system. The old system was organized by administrative fiat and was disbanded by the same means.

Figure 7  
Elements of the Township-Cooperative-Household System

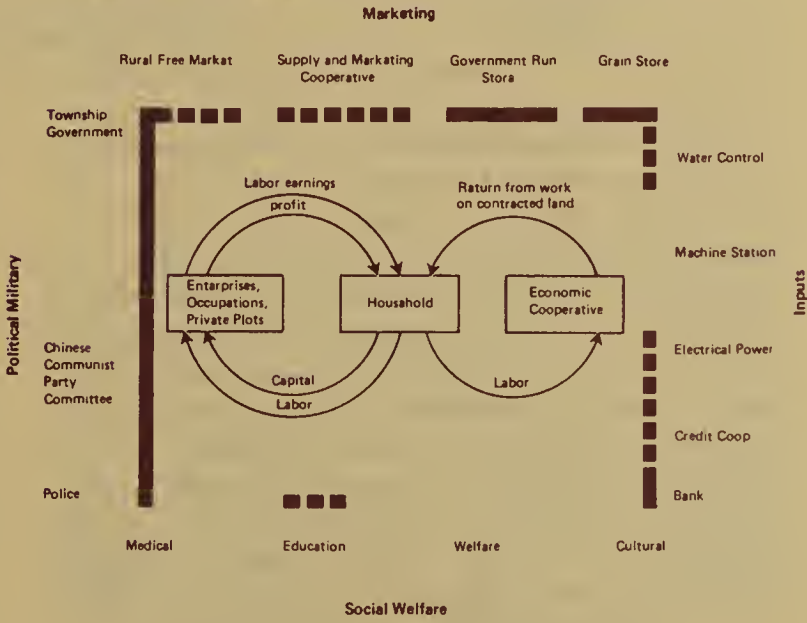


Table 7—China's farm structure, 1978 and 1984

Item	1978	1984
Basic farm production units	5.15 million, production teams	185 million households
Rural enterprises	1.48 million commune and brigade enterprises	6 million rural enterprises
Private plots	5 percent of arable land	5+ percent of arable land
<u>Political-military</u>		
Local units of government	53,348 communes	91,171 townships 700,000 village committees
Party	53,000+ commune party committees	Township party committees
Police	Commune police station	Township police station
<u>Marketing</u>		
Rural free markets	33,000	61,000
Supply and marketing cooperatives	136,000 ag co-ops 440,000 brigade shops	35,000 co-ops 600,000 shops 4 million employees 80 percent of households members of co-op
Government stores	About 1 per commune	Continued
Grain stations	35,000	Continued
<u>Inputs</u>		
Water control	Tight control	More relaxed controls
Tractor stations	About 42,000 stations	Largely disbanded
Electrical power	Initial network set up	Network expanded
Extension	50 percent of communes with full extension system	Ag tech associations in 41,000 townships
Credit co-ops	59,000	42,000
Agricultural banks	Not organized in 1978	27,000
<u>Social-welfare</u>		
Medical	Cooperative service	Private and co-op service
Education	More students	Fewer students
Welfare	Commune system service	Services declined
Cultural	6500 rural cinemas	10,300 cinemas

The new township-collective-household system consists of five parts: local government, party committees, state entities, collective and economic enterprises, and households. Townships (*xiang*), the basic level unit of government in precommune days, were revived to handle local government and administrative functions. Party committees were scheduled to emphasize political functions. Economic cooperatives and collectives were to manage economic affairs. Households were encouraged to participate in government and party affairs as appropriate and were expected to be linked through

contracts to collectives. Figure 7 shows the realignment of old institutions and organization of new entities. Dark solid lines, dashed lines, and blank spaces indicate a continuum from greater to lesser degrees of government and party control over households and economic cooperatives. The dark solid lines suggest substantial control, dashed lines indicate considerable or indirect control, and blank spaces less control. For readers interested in how specific parts of the commune system fared in the development of the new system, see table 7, which also indicates the magnitude of the changes.



## The New Farm Production Unit

Production unit goals and government mechanisms to control the economic behavior of production units changed dramatically. In the old system, cadres were rewarded according to their performance in motivating production teams to fulfill state output and marketing targets. In the new system, the objective economic function changed from fulfillment of targets to households maximizing income within the constraints of national policy. The new system created an environment in which households could initiate action, make economic decisions, and allocate resources.

Farm households were made the centerpiece of the new system. Whereas the commune system made production teams the basic farm production unit and tried to reduce the importance of the family, the new system counted on the vitality, creativity, and energy of rural households to increase output and raise living standards. The new payment system called the *baogan daohu* or *baogan* system is a contract system that made rural households responsible for their work and linked production performance with earnings. Households negotiated with production teams (hereafter referred to as cooperatives) to farm parcels of land, raise specified crops, and return a portion of the crops or cash to the cooperative as payment for use of the land and to meet collective expenses. Output raised in excess of state and cooperative obligations constituted the reward to the household. Families consumed the surplus or sold it in rural markets. Obligations of households and cooperatives were often specified in written contracts.

The *baogan* system produced strong incentives as families were permitted to raise income through initiative, hard work, good management, wise use of technology, and reduction of production costs. The system gave families a new stake in the rural economy. It allowed them considerable freedom to make basic economic decisions and allowed them to allocate their own labor force and arrange their own work schedules.

Central planning mechanisms changed substantially from 1982 to 1985. Rather than issuing mandatory sown area and production targets, planning authorities formulated

"guidance plans" which were passed down administrative channels to assist local cadres. Farm operators reviewed these plan targets as only one of many factors in making decisions. Also, rather than holding prices stable as before, government officials adjusted prices of farm products and interest rates to influence farm operators. Additionally, cadres loosened their grip on rural free markets, allowing market forces to have an increasing effect on the kinds, quality, and quantities of goods produced. Moreover, the Government abandoned its stress on creating rural self-sufficient communes and allowed limited specialization to occur. For example, farmers with excellent cotton growing conditions in Shandong province, limited their efforts to raise grain, and began specializing in cotton production.

The Government also made substantial changes in factor markets (land, labor, capital) to nourish the newly formed household production units. In theory, production team members collectively owned the land they tilled and the machinery they used. But in practice, cadres in the commune system often treated the means of production as if they were owned by the state. The reforms made practice coincide with theory—the means of production are owned by members of the economic cooperative. An equally important change occurred in land use patterns with the institution of the *baogan* system. At first, contracts were made for a crop season or for a year. But when investment in land and soil fertility maintenance practices lagged, cadres extended contracts to 15 years. These measures gave farm households special tenurial rights on the plots of land they farmed. With the approval of the cooperative unit and under special rules, households can transfer contracted land from one household to another.

Under the old system, rural cadres restricted the movement of population and the labor force to insure production targets were met and to secure political stability. Rural individuals were not free to leave their production units and search for employment in other communes, counties, or cities. On the other hand, the reforms allowed individuals to leave agricultural production and work in rural villages and townships. However, policies still restrain individuals from leaving rural areas and moving to already congested cities.



Capital flows were likewise restricted in the old commune system. The commune cadres under party discipline invested funds according to state policies and plans. Rural banks performed audit and control functions to ensure that investment funds were spent properly. Individuals were only allowed to invest real and financial assets in production teams, government bonds, and open savings accounts in credit cooperatives. They were not permitted to invest and start up new firms and were limited in the kinds of investments they could make in household or private plot production activities. The reforms swept away many of these restrictions and households are now permitted to invest in new firms in local areas or in other provinces and to start up household enterprises. Households are also permitted to obtain loans from rural banks for production purposes.

The old commune system had a fairly good extension system to bring new techniques to production units. Part of the extension system remains intact but the most important change the reforms brought was to give individuals greater incentive to increase output by improving production techniques. Farmers, motivated by the opportunity to raise their standard of living by producing more and reducing costs, were hungry for new ways to improve performance. Previously, farmers had little direct interest in learning new techniques because commune cadres made basic economic decisions. With reforms, however, farmers sought out extension workers for advice, thronged book stores to purchase technical handbooks and bulletins, and eagerly attended demonstrations.

In the old commune system, cadres managed supplies of inputs such as irrigation water, machinery, fertilizer, fuel, seed, and electricity to insure teams fulfilled state production targets. Households were not permitted to purchase supplies for use in private production activity. Rural cadres continue to manage input supplies to affect household economic behavior but the reforms also encourage households to purchase inputs to raise output. Moreover, the Government is reforming the rural commercial system so that households now have many more avenues to purchase inputs.

Before reforms, production units sold most of their products to state-owned or state-controlled institutions. For example, state-owned grain stores contracted with teams to purchase set quantities of specified grains and oilseeds. The state used these contracts to decide what and how much of each good should be produced. Households now make contracts with grain stations to produce grain and oilseeds, but the amount of grain contracted has been reduced sharply. Grain stations now participate in local markets buying and selling grain. Whereas households and teams once were forbidden to sell grain in rural markets, now they are encouraged to do so once they have fulfilled state grain procurement contracts. Moreover, the list of goods forbidden to enter rural markets has been reduced substantially.

In the commune system, rural markets were viewed as a threat to state commerce. There were restrictions on the number of markets, days they could function, and kinds of goods traded. The reforms encouraged the opening of rural markets and the number of markets expanded from 33,000 in 1978 to 61,000 in 1985, while sales rose from 12.5 billion yuan to 63.2 billion. By 1986, rural markets had become the country's chief supplier of vegetables, fruits, and meat. The state also allowed individuals and households to form firms to participate in local retail trade so that rural consumers have many more avenues than before to purchase goods and services.

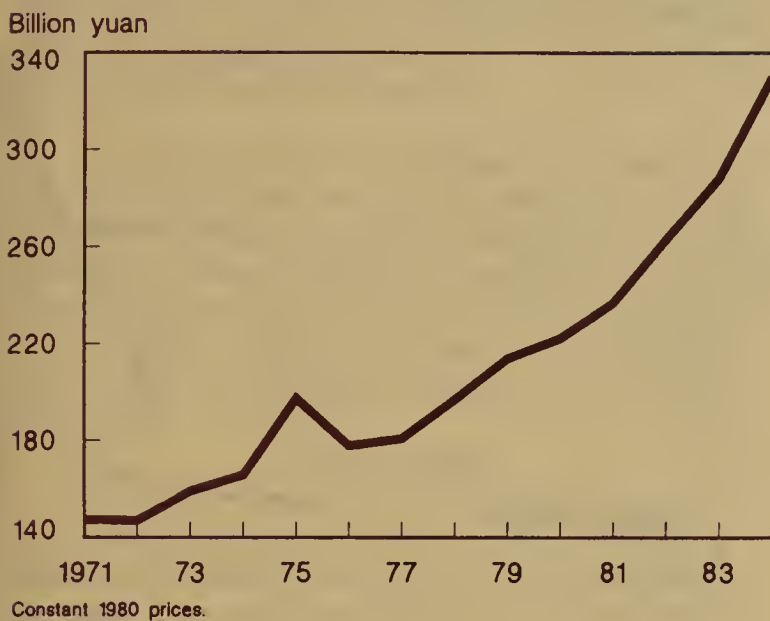
The state has also loosened its tight control on wholesale activities, and more than 1,000 wholesale markets for agricultural and sideline products have grown up in urban areas. To enhance the flow of goods in markets, the state spent millions of dollars to expand merchandising space, construct new warehouses and cold storage facilities, and provide water and drainage facilities. Additional funds were spent to improve transportation and communication systems and from 1981 to 1986, 52,000 kilometers of roads were built.

### **Assessment of New Rural Structures**

China's rural economy expanded rapidly from 1978 to 1985, and overall output



Figure 8  
Gross Value of Agricultural Output



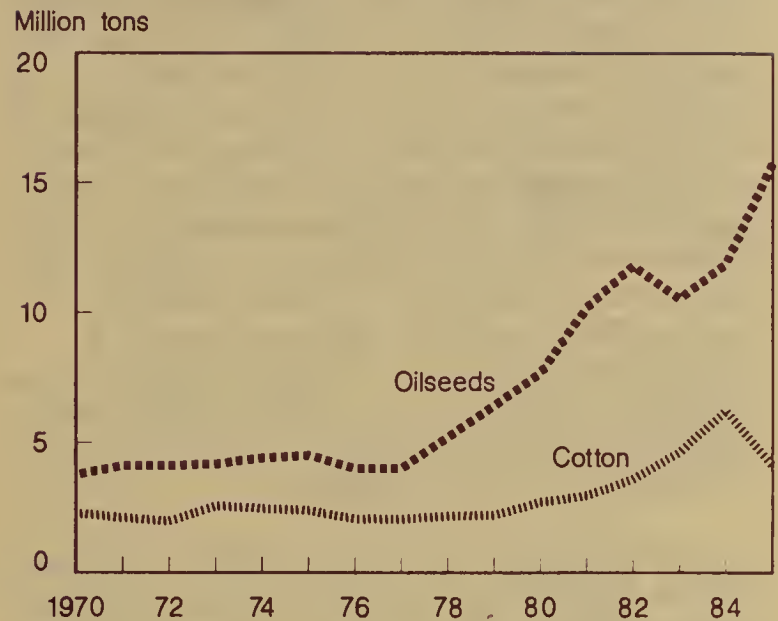
expanded 9 percent a year. Crop and livestock production also rose rapidly. Large numbers of rural enterprises were organized which extended commercial services, and old and new enterprises boosted industrial output. Rural per capita income rose 16 percent. Increased income and relaxed constraints on building homes fueled the largest boom in rural construction since 1949. Within certain limits, families were allowed to specialize in certain lines of production. Reform policies permitted income inequalities to exist so that families who worked hard, specialized in given lines of production, and were frugal and efficient, could retain their profits and become relatively well off.

The gross value of agricultural output (GVAO) is one farm-sector measure that can be used to chart the progress of China's rural economy. GVAO aggregates the value of output of five subsectors—crops, livestock, aquatic products, forestry products, and rural sideline production.

From 1971 to 1978, GVAO in constant 1980 prices expanded by an annual compound rate of 4.2 percent (figure 8). In the reform period of 1979–1984, it grew by 9 percent.

Annual grain, cotton, and oilseed output is also a measure of growth in the rural economy. In the pre-reform period, grain output grew at an annual compound rate of 3.4 percent a year. Output in the reform period, however, grew at a modest 2.7 percent despite decreased area sown to grain crops. Output of

Figure 9  
Cotton and Oilseed Production



oilseed crops grew at an annual average rate of 17 percent in the 7-year reform period, much faster than in the 7-year period before reforms and much faster than the growth of grain output (Figure 9). Cotton output paralleled the growth of oilseed production as farmers shifted acreage from grain to cash crops.

Electrical power consumption and chemical fertilizer applications increased during the reform. Moreover, better seed and technology boosted yields. The new incentive systems motivated farmers to use inputs more effectively, which along with increased supplies, raised output. It appears that the *baogan* system and rural reforms instituted to support that system greatly boosted incentives. Farmers were encouraged to carefully use inputs, raise yields, and increase output. The reforms renewed farmers' commitment to support the party's rural reforms, and gave them considerable flexibility to make economic decisions and manage their own work schedules.

The growth of grain, cotton, and oilseed output affected China's agricultural trade. The large increase in domestic grain production enabled authorities to build up grain stocks and to reduce imports of wheat and coarse grains. For example, China's wheat imports rose from nearly 8 million tons in 1978 to over 13 million in 1982 and then fell to about 6 million in 1985. Coarse grain imports rose from over 1 million tons in 1978 to nearly 2 million in 1982, and then fell

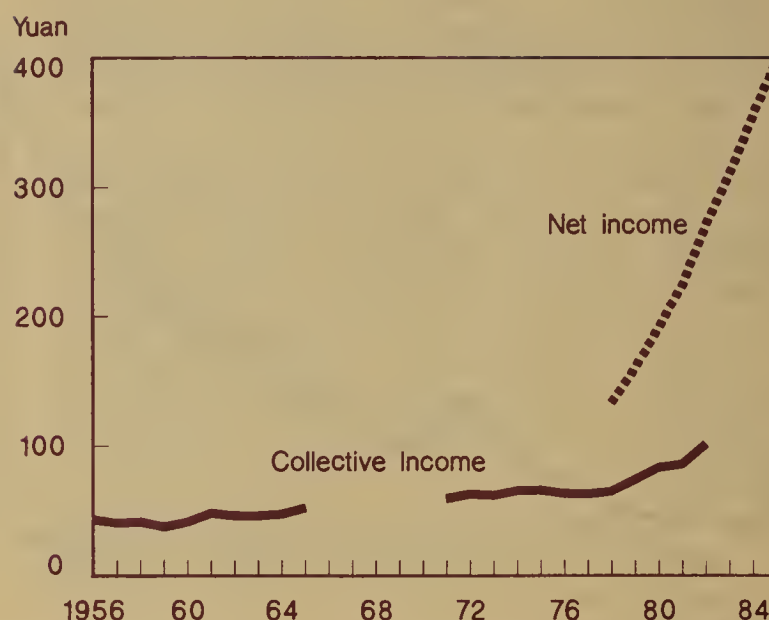


dramatically to only 100,000 in 1985. Moreover, China changed from being a net coarse grain importer to an exporter of over 5 million tons in 1985 (see table 15). In another example, domestic cotton production increased dramatically so that in the space of a few years China changed from one of the world's largest importers of raw cotton to a major exporter. These data underscore the importance of the links between policy and institutional changes and China's role in international markets. Future changes in China's rural economy should be noted carefully in assessing, a) China's ability to export agricultural products, and b) China's demand for U.S. farm products.

A third way to assess the reforms' effects is to examine the health of rural enterprises and industries. Beginning in the mid-1960's, rural industry expanded steadily so that by 1978 there were more than 1 million enterprises which employed 17 million persons and generated some 20 billion yuan of output. After 1978, restraints on rural enterprises were relaxed and reform policies encouraged the growth of rural industry. Old commune, brigade, and team enterprises were reformed and newly formed townships organized new firms. By the end of 1985, there were more than 6 million village and township enterprises which employed some 60 million persons or 17 percent of the rural labor force. The enterprises generated 230 billion yuan worth of output, which is 20 percent of total industrial output, up sharply from 6.8 percent in 1978. In 1985, the industries produced 26 percent of the country's coal, 50 percent of the clothes and building materials, and constructed one-third of the floor space. Also, rural laborers were permitted to begin work as self-employed persons engaging in transport, building trades, repair work, and food services. Some 8.1 million rural persons became shop owners or peddlers. The total number of self-employed people reached 18 million by 1985.

A fourth way to view the reforms is to look at changes in rural per capita income. Per capita income from collective farms rose at an annual compound rate of 2.3 percent from 1971 to 1978. With the demise of the collective farm system, per capita income distributed to farmers ceased to be a useful measure of rural income. Rural income and expenditure surveys are now being used to

Figure 10  
**Rural Per Capita Income**



measure income changes. According to these surveys, rural per capita net income rose from 160.2 yuan in 1979 to 397 in 1985, an annual compound growth rate of 16.3 percent. These income figures were not adjusted for changes in price levels. According to official State Statistical Bureau data, retail prices from 1979 to 1984 rose only an average of 2.8 percent a year.

Spending patterns reflect the rapid rise in per capita incomes. The proportion of income spent for food fell from 67.7 percent of living expenses in 1978 to 59 percent in 1984. Rural families also used their rising income to increase their stock of consumer durables (see table 4). Rising incomes and liberalization of policies restricting rural house construction fueled an enormous boom in building construction. More housing was constructed during 1979-85 than from 1949 to 1978. Since 1978, more than 650 million square meters of rural housing have been constructed each year.

Clearly, the reforms created an environment within which rural people labored diligently to create a better life for themselves and their posterity. As is often the case with rapid social and economic changes, however, these successes have given rise to new sets of problems.

### Current Problems and Outlook

Living standards improved substantially for most rural families since reforms began in 1978, but some people lost power, status, and prestige. Many commune, brigade, and team



cadres became redundant as production shifted from collective units to households. Current leaders have a substantial administrative and political task gaining support for their reforms from these displaced leaders.

The reforms also damaged the interests of those persons who materially benefited from policies that promoted income equality. The reforms allowed greater inequalities in income than rural households had experienced in 30 years. Entrepreneurs welcomed the change, but clearly others saw themselves worse off than before.

With the demise of the commune system and with attention focused on households, the health of collective/cooperative institutions eroded. The number of children attending school in rural areas declined. Funds to support rural health care systems declined and some rural health care personnel left for more lucrative work in cities. Funds were also short for the rural welfare system and care for the elderly declined.

Investment patterns for rural production changed dramatically during the reform period. Rural families invested heavily in building new homes. They also purchased farm machinery so that by 1985 farmers owned more than 70 percent of all the tractors in the country. With longer contracts in the *baogan* system, farm families also began to invest in the land specified in their contracts. Collectives formerly invested heavily in irrigation and water control systems, but early in the reform period households slacked off investments there. Equally damaging to China's rural economic system is the ecological degradation now occurring. The pursuit of short term profits has driven farmers to overgraze portions of the countryside, which could have serious consequences for decades to come. However, there are signs that remedial action is being taken to correct some of these problems.

The new decisionmaking environment has created new pressures in the economy. With markets becoming more important, farmers are becoming eager to learn the latest information on demand and supply conditions. Consumers have more freedom of choice, stocks of unwanted goods grow, and farmers can raise their income if they produce the kinds of goods consumers want, i.e., lean pork, fresh fruit, vegetables, and fish.

The relaxation of the self-sufficiency policy allowed farmers to specialize. As rural workers specialized, however, they found that, output grew faster than local mill capacity so that goods spoiled before they could be processed. Also, farmers in some areas increased output only to face financial losses because transportation facilities were inadequate to move products where demand was high. Recognizing these bottlenecks, the Government plans to invest heavily in transportation and communication systems, improve packaging and handling techniques to reduce loss, expand storage facilities, and to increase cold storage capacity.

What will the future bring? China's leaders over the past 40 years have been willing to make radical adjustments in the rural economy. As long as such leaders remain in power, rural institutions likely will be changed in the future. Clearly, the current reforms have gone far to dismantle the old commune system. But opposition to the reform could mount and conditions could change so that parts of the old system could be restored. On the other hand, if the pricing system is reformed and other sectors of the economy are reorganized, the rural economic system could make greater use of market mechanisms to make economic decisions. We neither expect a full return to the old commune system nor an advance to a full market economy, but rather some rural economic system that has socialist and Chinese characteristics.



## CHINA'S AGRICULTURAL OUTPUT IN 1990 AND 2000

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**Abstract:** China's major crop and livestock production, except milk, will likely grow considerably more slowly for the rest of the century than during the preceding 5 years. Policy changes have helped rapid development of agricultural production during the sixth 5-year economic plan period (1981-85). Yield increases for crops and improvement in breeding and feeding of livestock will be the main sources of growth. The targets set for 1990 and 2000 are considered achievable because they are based on much lower growth rates. Future development of livestock will, however, highly depend upon China's domestic grain production and possibly partially on foreign grain imports.

**Keywords:** Production targets, crops, livestock products, growth rates, grain trade.

Conclusions in this article stem from our assessment of the *Summary of the Seventh Five-year Economic Plans*, published recently, and the report *China in the Year 2000* prepared by the State Council and the Chinese Academy of Social Sciences at the end of last year. The "Seventh 5-year Plan for Economic and Social Development" was approved on April 12, 1986, by the Fourth Session of the Sixth National People's Congress. The year 2000 report was a 2-year study completed by 400 specialists and scholars covering agriculture, the general economy, population and employment, consumption and expenditures, science and technology, education, natural resources, energy, environment, transportation, international environment, and macroanalysis. The powerful State Council reportedly has paid great attention to the year 2000 report and incorporated many of the report's forecasts into the seventh 5-year economic plan.

The following table summarizes actual agricultural output in 1980 and 1985 and the plan targets for 1990 and 2000 as presented in the two publications. In the past 5 years, favorable agricultural policies, most notably the household responsibility system, provided farmers tremendous incentives and therefore raised agricultural production to a new level. Output of all commodities, except for total grain, grew more than 7 percent a year. Grain's low growth rate was mainly caused by a 28-million-ton drop in output from 1984 to 1985, because of declines in grain area, decreased use of inputs, particularly

fertilizers, and less favorable weather (see grain crop section of this report).

Agricultural production, however, is forecast to grow at a slower rate during the seventh 5-year plan period and even slower growth is forecast for the 1990's. Milk is the only commodity that will maintain the similar high growth rate of the early 1980's through the rest of this century. Cotton production during 1986-90 will basically be limited to around 4.25 million tons a year, because of large domestic stocks and expected slow growth in consumption. After 1990, cotton output is projected to increase only about 2 percent annually toward the year 2000. Oilseed crops, including rapeseed, peanuts, sunflowerseed, sesame, and other minor crops such as castor beans, will return to a modest growth pattern of 2 to 3 percent per year during 1986-90 after sharp increases in output due to rapid expansion of planted areas and growth of yields during 1980-85. Sugar output will follow a similar pattern of slower growth.

Although milk output is expected to continue rising at a fast pace, growth in total meat and egg production will decline significantly during 1986-90 and even more drastically in the 1990's. The slower growth in livestock product output appears generally consistent with the slower increase in grain output projected for the corresponding periods.

Finally, the annual growth in crop production will basically come from improved yields, as area sown to grains will continue to



Table 8--Major agricultural production targets of the seventh 5-year economic plan and the year 2000 report

Commodities	Output				Implied annual growth rate		
	1980	1985	1990	2000	1980-85	1985-90	1990-2000
	Million tons				Percent		
Total grain	321	379	425-450	520	3.4	2.3-3.5	1.7-2.0
Cotton	2.71	4.15	4.25	5.10-5.25	8.9	0.5	1.8-2.1
Oilseed crops 1/	7.69	15.78	18.25	21.3-21.8	15.5	3.0	1.6-1.8
Sugar	2.57	4.45	5.5-6.0	7.20-7.50	11.6	4.3-6.2	2.3-2.7
Total meat 2/	3/ 12.05	4/ 19.01	22.75	27.8-30.0	7.8	3.7	2.0-2.8
Milk	1.37	2.98	6.25	28.8-36.0	16.8	16.0	16.5-19.1
Eggs	NA	5.30	8.75	10.2-16.0	5/ 23.6	10.5	1.5-6.2

NA = Not available.

1/ Includes rapeseed, peanuts, sunflowerseed, sesame, and other minor oilseeds such as castor beans. 2/ Includes pork, beef, mutton, and poultry meat. 3/ Includes 1 million tons of estimated poultry meat. 4/ Derived from the 1990 meat target and the increase in percentage given in source 2. 5/ Calculated by using 1982 egg production as a base.

Sources: (1) China Ag. Statistical Yearbook 1981 and 1985 SSB Communique.

(2) Summary of the Seventh 5-year Economic Plans (1986-1990), RmRb, April 15, 1986.

(3) China's Agriculture in the Year 2000, JJRb, Nov. 9 1985.

decline and expansion of oilseed areas will be less significant than in recent years. Despite government pressure on farmers to halt the decrease in grain areas during the seventh 5-year plan period, the area sown to crops is expected to decline by about 20 million hectares between 1980 and 2000. With the proportion of crop area sown to grain, and to economic and other crops changing from a ratio of 79:12:9 in 1980 to an estimated 74:15:11 in 2000, as suggested in the report, grain yields would have to nearly double from 2.73 tons per hectare in 1980 to 5.3 in 2000 to maintain a grain availability of about 400 kilograms per person. This implies grain yields will increase about 3.3 percent per year between 1980 and 2000. Given the long term

growth rate achieved in the past 30 years and the good performance during the first 5 years of the 1980's, the grain targets for 1990 and 2000 appear achievable.

The production targets for cotton, oilseed crops, and sugar also appear within reach by the years 1990 and 2000, considering the low implied growth rates. Growth in livestock product output, despite expected sharp declines in growth rates for meat and eggs, will critically depend on grain production for the next 15 years. Failure to increase grain production in any consecutive years would mean either higher demand for grain imports or a drastic cut in livestock production following the bad years.

Table 9--Grain area, yield, and production 1/

Grain	1981	1982	1983	1984	1985
Million hectares					
Sown area					
Wheat	28.31	27.96	29.05	29.58	29.63
Rice	33.30	33.07	33.14	33.18	31.40
Coarse grains	30.68	29.88	30.12	29.19	27.33
Corn	19.43	18.54	18.82	18.54	17.40
Sorghum	2.61	2.78	2.71	2.45	2.38
Millet	3.89	4.04	4.09	3.80	3.75
Barley	4.06	3.85	3.85	3.77	3.25
Oats	0.70	0.66	0.66	0.64	0.56
Potatoes	9.62	9.37	9.40	8.99	8.00
Others 2/	13.05	13.19	12.33	11.95	11.82
Total 3/	114.96	113.46	114.05	112.88	108.18
Tons/hectare					
Yield 4/					
Wheat	2.11	2.45	2.80	2.97	2.88
Rice	4.32	4.89	5.10	5.37	5.37
Coarse grains	2.59	2.74	3.04	3.30	3.09
Corn	3.05	3.27	3.62	3.96	3.68
Sorghum	2.55	2.51	3.09	3.15	2.73
Millet	1.48	1.63	1.85	1.85	1.73
Barley	1.75	1.81	1.77	1.94	2.09
Oats	1.09	1.12	1.10	1.22	1.30
Potatoes	2.70	2.89	3.11	3.17	2.98
Others 2/	1.23	1.18	1.31	1.38	1.43
Total 3/	2.83	3.12	3.40	3.61	3.50
Million tons					
Production					
Wheat	59.64	68.47	81.39	87.82	85.28
Rice	143.96	161.60	168.87	178.26	168.48
Coarse grains	79.47	81.82	91.63	96.22	84.50
Corn	59.21	60.56	68.21	73.41	64.00
Sorghum	6.65	6.97	8.36	7.72	6.50
Millet	5.77	6.58	7.54	7.03	6.50
Barley	7.10	6.97	6.80	7.30	6.78
Oats	0.76	0.74	0.72	0.78	0.72
Potatoes 5/	25.97	27.05	29.25	28.48	23.84
Others 2/	15.99	15.57	16.15	16.54	16.88
Total 3/	325.02	354.50	387.28	407.31	378.98

1/ Data presented here are official figures released by the SSB or the Ministry of Agriculture, except for (1) 1985 area, (2) 1985 total and individual coarse grain production, and (3) 1981-85 barley and oat, and other grain area and production.

2/ Consists of soybeans, pulses, and other miscellaneous grains. All of these items are included in China's definition of total grains.

3/ PRC definition.

4/ Calculated from area and production figures.

5/ Converted to a grain-equivalent weight using a 5:1 conversion ratio.

Sources: China Ag Yearbook, 1981, 1982, 1983, 1984 and 1985; China Stat Yearbook, 1981, 1983, and 1984; and the 1985 SSB Communiqué.



Table 10--Oilseeds and cotton area, yield, and production

Item	1981	1982	1983	1984	1985 1/
1,000 hectares					
Sown area					
Cotton	5,185	5,829	6,077	6,920	5,200
Oilseeds, USDA 2/	20,521	21,594	20,329	21,056	22,145
Soybeans	8,023	8,419	7,567	7,286	7,800
Oilseeds, PRC 3/	9,134	9,343	8,390	8,678	11,910
Peanuts	2,473	2,416	2,201	2,421	3,500
Rapeseed	3,801	4,122	3,669	3,413	4,600
Sesameseed	818	965	789	858	960
Sunflowerseed	1,040	814	733	1,013	1,150
Other oilseeds 4/	1,003	1,026	998	973	1,700
Kg/hectare					
Yield					
Cotton	572	617	763	900	798
Oilseeds, USDA 2/	1,193	1,254	1,356	1,542	1,432
Cottonseed	1,145	1,235	1,546	1,537	1,357
Soybeans	1,162	1,073	1,290	1,331	1,347
Oilseeds, PRC 3/	1,117	1,265	1,257	1,408	1,307
Peanuts	1,547	1,621	1,795	1,989	1,903
Rapeseed	1,069	1,372	1,168	1,232	1,243
Sesameseed	623	354	442	555	677
Sunflowerseed	1,281	1,580	1,828	1,682	1,652
Other oilseeds 4/	471	601	624	730	552
1,000 tons					
Production					
Cotton 5/	2,968	3,598	4,637	6,077	4,150
Cotton (1,000 bales) 5/	13,600	16,500	21,300	27,900	19,060
Oilseeds, USDA 2/	24,484	27,084	28,642	31,064	31,710
Cottonseed	5,936	7,196	9,274	10,640	7,055
Soybeans	9,325	9,030	9,760	9,700	10,509
Oilseeds, PRC 3/	10,205	11,817	10,550	11,910	15,550
Peanuts	3,826	3,916	3,951	4,815	6,662
Rapeseed	4,065	5,656	4,287	4,205	5,586
Sesameseed	510	342	349	476	650
Sunflowerseeds	1,332	1,286	1,340	1,704	1,900
Other oilseeds 4/	472	617	623	710	939
Available oil 6/	3,848	4,422	4,247	3,552	3,992
Available meal 6/	9,001	9,715	9,731	8,397	8,571

1/ All 1985 figures are USDA estimates except for output of cotton, soybeans, oilseeds (PRC), peanuts, rapeseed, and sesameseed.

2/ Oilseed data published by USDA include only: soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed; area includes cotton.

3/ China's total oilseed data exclude soybeans and cottonseed.

4/ "Other oilseeds" are calculated as a residual and include mainly huma (an edible oil-bearing flaxseed) and castor bean; oil-bearing tree seeds are excluded.

5/ Cotton production is on a ginned-weight basis. Bales are 480 pounds.

6/ Available oil and meal are estimated for the marketing year following harvest by applying assumed crush and extraction rates to production plus net imports of soybeans, soybean oil, and soybean meal. Other edible oils from grain crops and oil-bearing tree seeds are included in available oil.

Source: China Stat Yearbook, 1983, 1984, and 1985; China Ag Yearbook, 1982, 1983, 1984, and 1985; and the 1985 SSB Communique.

Table 11--Provincial grain production

Province	1982	1983	1984	1985	Province	1982	1983	1984	1985
Million tons									
NORTHEAST					EAST				
Heilongjiang	11.50	15.49	17.50	14.30	Zhejiang	17.13	15.84	18.17	16.21
Liaoning	11.52	14.85	14.25	9.76	Jiangsu	28.56	30.53	33.06	31.27
Jilin	10.00	14.78	16.18	12.25	Shanghai	2.16	2.07	2.50	2.14
					Anhui	17.88	20.11	22.03	21.68
NORTH					CENTRAL				
Shandong	23.75	27.00	30.40	31.38	Hubei	19.96	19.88	22.50	22.16
Hebei	17.52	19.00	18.70	19.67	Hunan	23.75	26.54	26.00	25.14
Beijing	1.86	2.02	2.18	2.20	Jiangxi	14.09	14.61	15.49	15.34
Tianjin	1.23	1.11	1.31	1.41					
Henan	22.17	29.04	29.20	27.11	SOUTH				
Shanxi	8.25	8.06	8.72	8.23	Guangdong	19.43	19.61	19.60	17.38
NORTHWEST					Guangxi	13.53	13.63	13.50	11.17
Shaanxi	9.25	9.65	10.24	9.52	Fujian	8.48	8.58	8.50	7.94
Gansu	4.69	5.40	5.55	5.31					
Nei Monggol	5.30	5.60	5.94	6.04	SOUTHWEST				
Ningxia	1.20	1.45	1.54	1.40	Sichuan	37.35	40.09	40.80	38.31
Xinjiang	4.08	4.54	4.87	4.99	Guizhou	6.54	7.03	7.40	5.95
Qinghai	.93	.90	1.04	1.00	Yunnan	9.46	9.55	10.05	9.35
					Xizang	.45	.37	0.48	0.53
					Total (sum)	353.43	387.28	407.68	379.11
					SSB Total	354.50	387.28	407.12	378.98

Sources: 1981-1983, China Stat Yearbook, 1981, 1983, and 1984. Data for 1985 are from the Monthly Bulletin of Statistics, China, No.5, 1986.



Table 12--Major agricultural crop production, by region, 1984

Region	Northeast	North	Northwest	East	Central	South	Southwest	Total
1,000 tons								
Total grain	48,180	90,245	29,095	76,255	64,250	40,360	58,920	407,305
of which								
Summer grain 1/	65	40,970	12,575	21,425	5,310	790	10,850	91,985
Wheat	4,005	40,435	13,810	16,660	4,215	335	8,355	87,815
Rice	6,460	4,175	1,800	45,740	54,765	35,895	29,420	178,255
Corn	24,615	25,435	6,795	2,750	1,535	1,110	11,170	73,410
Soybeans	4,350	2,100	490	1,245	580	375	555	9,695
Tubers	1,165	10,035	1,665	4,625	2,275	2,480	6,230	28,475
Peanuts	338	2,568	47	431	209	924	299	4,815
Rapeseed	2	138	325	1,608	819	20	1,294	4,205
Sesame	34	171	11	90	151	11	8	476
Sunflowerseed	840	283	564	0	1	0	16	1,704
Sugarcane	0	88	5	839	2,772	29,645	6,171	39,519
Sugarbeets	5,109	497	2,624	37	0	0	17	8,284
Cotton	66	3,816	274	1,139	804	1	159	6,258
Jute & hemp	0	306	0	512	356	158	161	1,492
Tobacco	124	642	63	90	168	78	626	1,789
Percent								
Total grain	11.8	22.2	7.1	18.7	15.8	9.9	14.5	100.0
of which								
Summer grain 1/	0.1	44.5	13.7	23.3	5.8	0.9	11.8	100.0
Wheat	4.6	46.0	15.7	19.0	4.8	0.4	9.5	100.0
Rice	3.6	2.3	1.0	25.7	30.7	20.1	16.5	100.0
Corn	33.5	34.6	9.3	3.7	2.1	1.5	15.2	100.0
Soybeans	44.9	21.7	5.1	12.8	6.0	3.9	5.7	100.0
Tubers	4.1	35.2	5.8	16.2	8.0	8.7	21.9	100.0
Peanuts	7.0	53.3	1.0	8.9	4.3	19.2	6.2	100.0
Rapeseed	.0	3.3	7.7	38.2	19.5	0.5	30.8	100.0
Sesame	7.2	36.0	2.2	18.9	31.7	2.3	1.7	100.0
Sunflowerseed	49.3	16.6	33.1	.0	0.1	.0	1.0	100.0
Sugarcane	0.0	0.2	.0	2.1	7.0	75.0	15.6	100.0
Sugarbeets	61.7	6.0	31.7	0.4	.0	0.0	0.2	100.0
Cotton	1.1	61.0	4.4	18.2	12.8	.0	2.5	100.0
Jute & hemp	.0	20.5	0.0	34.3	23.9	10.6	10.8	100.0
Tobacco	6.9	35.9	3.5	5.0	9.4	4.4	35.0	100.0

-- = Negligible.

Northeast = Heilongjiang, Liaoning, Jilin

North = Shandong, Hebei, Beijing, Tianjin, Henan, Shanxi

Northwest = Shaanxi, Gansu, Nei Monggol, Ningxia, Xinjiang, Qinghai

East = Zhejiang, Jiangsu, Shanghai, Anhui

Central = Hubei, Hunan, Jiangxi

South = Guangdong, Guangxi, Fujian

Southwest = Sichuan, Guizhou, Yunnan, Xizang

1/ Mainly winter wheat, roughly 85 to 90 percent, and other minor grains.

Source: China Ag. Yearbook, 1985.

Table 13--Tropical and subtropical crops, 1984

Crops	Unit	National total	Guangdong	Guangxi	Yunnan	Fujian
Rubber						
Total area	Ha.	494,133	391,400	16,200	78,467	8,067
Area tapped	Ha.	247,800	208,800	10,200	25,800	3,000
Output (dry rubber)	Tons	188,779	155,350	2,824	29,771	834
Coffee						
Total area	Ha.	3,533	1,867	0	1,667	0
Area harvested	Ha.	867	533	0	333	0
Output	Tons	740	180	0	560	0
Coconuts						
Total area	Ha.	16,000	15,933	0	67	0
Area harvested	Ha.	7,667	7,667	0	---	0
Output	1,000 pieces	38,784	38,741	0	43	0
Oil Palm						
Total area	Ha.	2,667	2,667	0	0	0
Area harvested	Ha.	267	267	0	0	0
Output (kernels)	Tons	590	590	0	0	0
Cashew Nut						
Total area	Ha.	11,467	11,467	0	---	0
Area harvested	Ha.	5,200	5,200	0	---	0
Output	Tons	418	403	0	15	0
Pepper						
Total area	Ha.	6,467	6,133	67	200	67
Area harvested	Ha.	4,000	3,867	---	67	67
Output	Tons	2,556	2,461	4	80	10
Sisal hemp						
Total area	Ha.	14,067	7,200	3,867	67	2,933
Area harvested	Ha.	12,133	6,800	3,667	---	1,667
Output (fiber)	Tons	21,764	14,127	5,697	29	1,910
Citronella grass						
Total area	Ha.	13,800	12,733	400	333	333
Area harvested	Ha.	12,533	11,733	267	200	333
Output (oil)	Tons	1,529	1,469	20	9	30

-- = Negligible.

Source: China Ag. Yearbook 1985, p. 161.



Table 14--Livestock yearend inventories and livestock product output

Item	1981	1982	1983	1984	1985 1/
Million head					
Yearend Inventory					
Hogs	293.70	300.78	298.54	306.79	331.48
Large animals	97.64	101.13	103.50	108.39	113.82
Draft animals	54.71	58.33	61.25	64.03	67.00
Cattle	73.30	76.07	78.08	82.13	86.64
Dairy cows	0.70	0.82	0.95	1.34	1.50
Water buffalos	18.77	19.14	19.15	19.51	20.00
Horses	10.97	10.98	10.81	10.98	11.38
Mules	8.42	9.00	9.45	9.96	10.30
Donkeys	4.33	4.46	4.59	4.79	5.00
Camels	0.63	0.61	0.56	0.53	0.50
Sheep	109.47	106.57	98.92	95.19	94.50
Goats	78.26	75.22	68.04	63.21	61.66
Million head					
Number slaughtered					
Hogs	194.95	200.63	206.61	220.47	238.95
Cattle	3.02	3.10	3.47	3.87	4.54
Sheep & goats	44.81	48.74	49.24	50.81	50.82
Percent					
Slaughter rate					
Hogs	63.8	68.3	68.7	73.8	77.9
Cattle	4.2	4.2	4.6	4.7	4.8
Sheep & goats	23.9	26.0	27.1	30.4	32.2
1,000 tons					
Production					
Meat	12,609	13,508	14,021	15,406	17,550
Pork	11,884	12,718	13,161	14,447	16,495
Beef	249	266	315	373	463
Mutton	476	524	545	586	595
Cow's Milk	1,291	1,618	1,845	2,186	2,500
Sheep and goat milk	258	341	374	410	415
Sheep's wool	189	202	194	183	177
Mohair	14	13	11	11	10
Cashmere	4	4	4	3	3
Eggs	NA	2,809	3,323	4,316	5,300

1/ All 1985 data are ERS estimates except for inventory of hogs, large animals, hogs slaughtered, hog slaughter rate, production of meat, and cow's milk.

Sources: China Ag. Yearbooks, 1982, 1983, 1984, and 1985, and the 1985 SSB Communique.

Table 15--Trade in grain, by country

Item	Calendar year			July/June year		
	1983	1984	1985 1/	1983/84	1984/85	1985/86 2/
1,000 tons						
IMPORTS:						
Total grain	13,061	9,742	5,713	9,697	7,648	6,782
Argentina	2,996	1	875	1,012	673	649
Australia	416	2,400	1,261	1,534	1,552	2,575
Canada	4,742	3,213	2,370	3,763	2,802	2,625
EC	884	27	324	170	82	252
Thailand 3/	208	34	67	146	98	100
United States 4/	3,815	4,067	816	3,072	2,440	581
Wheat	11,340	9,608	5,599	9,475	7,491	6,482
Argentina	2,946	1	875	1,010	673	649
Australia	416	2,325	1,214	1,486	1,495	2,500
Canada	4,659	3,187	2,370	3,737	2,802	2,500
EC	860	27	324	170	82	252
United States 4/	2,458	4,067	816	3,072	2,440	581
Coarse grain	1,675	134	114	197	157	300
Argentina	50	0	0	2	0	0
Australia	0	75	47	49	59	75
Canada	83	26	0	26	0	125
EC	24	0	0	0	0	0
Thailand	161	34	67	121	98	100
United States 4/	1,357	0	0	0	0	0
EXPORTS						
Rice 6/	580	1,010	2/900	NA	NA	NA
Coarse grain	98	1,507	5,500	5/450	5/5,600	5/5,000
Hong Kong	66	200	190	80	200	200
Japan	33	252	2,691	52	2,100	2,300
South Korea	0	455	1,190	11	1,770	800
Soviet Union 7/	NA	400	1,200	100	1,000	1,200
Others 7/	NA	200	229	207	530	500

NA = Not available.

1/ Preliminary.

2/ USDA forecasts as of June 1986. The 1985/86 total grain forecast is a mixed year total--wheat July/June and coarse grain October/September.

3/ Includes rice imports.

4/ Direct exports plus transshipments through Canada.

5/ October/September.

6/ Milled basis. China exports rice primarily to Asian and Eastern European nations and Cuba.

7/ Estimated.

Sources: Official partner-country trade statistics.



Table 16--Trade in other agricultural commodities, by country

Item	Calendar year			Marketing year		
	1983	1984	1985 1/	1983/84	1984/85	1985/86 1/
1,000 tons						
<b>IMPORTS:</b>						
Cotton				54	22	22
Soybeans	0	0	51	0	0	250
Soybean oil	10	10	21	0	21	10
Oilseeds 2/	2.8	1.7	1.1			
Oils 2/	35.0	14.4	34.8			
Sugar 4/	1,663	1,348	2,180			
Australia	325	262	452			
Brazil	0	0	0			
Cuba	772	705	680			
Philippines	0	68	80			
Thailand	90	278	911			
Others	476	35	57			
<b>EXPORTS:</b>						
Cotton				174.2	234.4	435.4
Bangladesh				6.9	0	0
Hong Kong				95.8	88.0	108.8
Indonesia				12.8	16.9	16.3
Japan				20.2	40.1	98.0
Soviet Union & E. Europe				10.0	49.0	65.3
Thailand				17.6	13.6	27.2
Others				10.9	39.5	119.7
Soybeans	317.9	820.5	1,100	700.0	1,042	900
Hong Kong	10.7	13.0	8.4	13.5	12	10
Indonesia	2.0	54.3	265.5	48.0	166	110
Japan	288.0	307.9	286.4	294.5	289	280
Malaysia	6.0	37.0	81.0	12.5	100	50
Singapore	9.6	8.3	4.5	9.2	9	5
Soviet Union	0	400.0	450.0	300.0	450	400
Others	1.6	1.0	16.0	22.3	16	0
Soymeal	682.5	580.0	650.0	587.5	643	550
Hong Kong 5/	155.8	126.8	81.1	145.3	75	75
Indonesia	39.6	55.2	135.7	50.1	110	75
Japan	17.7	11.3	41.0	17.2	21	25
Malaysia	121.0	107.0	117.0	129.0	100	75
Philippines	0	0	57.0	0	57	75
Singapore	109.6	92.1	46.2	0	85	75
South Korea	1.0	35.0	101.1	28.2	73	50
Thailand	95.0	87.7	18.8	109.0	75	75
Western Europe	142.9	65.0	42.4	108.7	47	45
Oilseeds 2/	361.1	336.4	409.6			
Oils 2/	155.7	130.8	161.6			
Sugar 4/	130.0	130.0	NA			

NA = Not available.

-- = Negligible.

1/ USDA forecasts as of June 1986. Marketing years = cotton, August/July; soybeans, September/August; and soybean oil and meal, October/September.

2/ Excludes soybeans and soybean oil.

3/ Includes soymeal.

4/ Raw-value basis.

5/ Includes all oilmeals exported to Hong Kong.

Sources: Official partner-country trade statistics; International Sugar Organization, Statistical Bulletin, 1986, Vol. 45, No. 3; and various issues of China's Customs Statistics.

Table 17--U.S. agricultural exports to China 1/

Item	Fiscal years			Calendar years		
	1983	1984	1985	1983	1984	1985
1,000 tons						
Wheat	1,921	4,579	1,373	2,458	4,067	816
Corn	2,161	0	0	1,356	0	0
Tobacco	0	0	242	0	---	---
Cattle hides, whole 2/	154	247	927	104	500	743
Soybeans	0	0	0	0	0	63
Cotton	2	3	1	2	2	1
Soybean oil	0	---	10	0	10	---
1,000 dollars						
Wheat	285,423	673,906	183,127	377,686	576,319	105,005
Corn	250,130	0	0	158,138	0	0
Tobacco	0	0	1,598	0	889	709
Cattle hides, whole	5,197	10,275	37,500	3,657	20,868	29,307
Soybeans	0	0	0	0	0	12,564
Cotton	3,256	4,743	1,661	2,342	3,582	1,582
Soybean oil	0	22	7,471	0	7,448	46
Others	2,212	3,307	7,572	2,287	4,091	8,033
Total agricultural	546,218	692,253	238,929	544,110	613,197	157,246
Total nonagricultural	1,392,964	2,053,508	3,393,739	1,628,990	2,391,103	3,698,454
Total exports	1,939,182	2,745,761	3,632,668	2,173,100	3,004,300	3,855,700

-- = Negligible.

1/ U.S. domestic exports, f.a.s.-value basis. Exports include transshipments of agricultural products through Canada.

2/ Numbers in thousands.

Sources: U.S. Bureau of the Census, "U.S. Agricultural Exports," country by commodity, monthly printouts; U.S. Department of Agriculture, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.



Table 18--Major U.S. agricultural imports from China, by calendar year 1/

Commodity	1981	1982	1983	1984	1985
1,000 dollars					
Meats and products, excluding poultry	830	1,006	1,040	1,027	687
Other meats, fresh or frozen	736	1,005	971	1,020	650
Poultry and products	24,668	11,506	8,368	12,358	15,746
Eggs	289	447	591	1,003	813
Feathers and down, crude	24,377	11,060	7,776	11,355	14,933
Hides and skins	715	836	1,119	927	1,080
Furskins	131	481	892	875	690
Wool, unmanufactured, apparel grades	5,860	4,400	4,182	4,020	3,786
Sausage casings	2,991	1,548	2,438	2,076	1,191
Silk, raw	6,863	5,705	5,140	4,518	3,433
All other animal products	14,790	12,213	14,655	16,418	16,292
Grains and feeds	3,360	3,360	3,889	4,461	4,743
Fruits and preparations	3,281	5,860	6,519	5,466	4,069
Fruits, prepared or preserved	3,279	5,846	6,517	5,461	4,060
Nuts and preparations	1,886	2,133	5,846	8,207	7,783
Vegetables and preparations	36,539	46,220	18,796	57,824	56,524
Vegetables, prepared or preserved	36,116	45,846	18,385	57,197	56,152
Mushrooms, canned	22,942	27,997	4,559	37,947	37,553
Waterchestnuts	6,606	9,239	6,303	10,795	12,197
Sugar and related products	8,033	7,461	8,078	5,278	7,070
Spices	4,072	5,557	6,103	7,906	8,905
Beverages	14,101	30,154	22,483	30,912	38,334
Coffee and products	32	4,002	1,444	0	433
Cocoa and products	1,674	13,958	7,935	8,701	15,243
Tea	10,731	9,995	9,938	18,279	18,269
Malt beverages	1,313	1,629	2,413	2,876	3,508
Oilseeds and products	153,357	2,280	7,902	4,661	2,657
Oilseeds and oilnuts	153,017	1,629	6,361	1,912	1,344
Oils and waxes, vegetable	340	651	1,541	2,749	1,311
Seeds, field and garden	1,100	1,367	778	1,288	1,307
Essential oils	9,882	11,974	13,944	12,943	13,309
Drugs, crude natural	4,999	12,810	8,282	6,282	6,377
All other vegetable products	2,001	3,703	3,422	4,403	3,467
Total agricultural commodities	299,328	170,093	142,985	190,960	197,192
Total nonagricultural commodities	1,530,699	2,045,763	2,101,115	2,873,846	3,664,463
Total imports	1,830,027	2,215,856	2,244,100	3,064,806	3,861,665

1/ Imports for consumption, customs-value basis.

Sources: U.S. Department of Commerce, Bureau of the Census, "U.S. Agricultural Imports," country by commodity, annual printouts; U.S. Department of Agriculture, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.

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# CONVERSION EQUIVALENTS

<i>Chinese</i>	<i>Metric</i>	<i>English</i>
1 mu	0.0667 hectare	0.1647 acre
15 mu	1.0 hectare	2.4711 acre
1 jin (catty)	0.5 kilogram =	.0005 ton 1.1023 pounds
1 dan (100 jin)	50.0 kilograms =	.05 ton 110.23 pounds
1 dun (ton)	1,000.0 kilograms =	1.00 ton 2,204.6 pounds

1 jin/mu 7.5 kilograms/hectare 6.93 pounds/acre

<i>Crops</i>	<i>Pounds/bushel</i>	<i>1.0 bushel</i>	<i>1.0 ton</i>
wheat, potatoes, soybeans	60	0.02722 ton	36.743 bushels
rye and corn	56	0.02540 ton	39.368 bushels
barley	58	0.02177 ton	45.929 bushels
oats	32	0.01452 ton	68.894 bushels
cotton (480-lb bale)	NA	NA	4.593 bales
cotton (500-lb running bale)	NA	NA	4.409 bales

## Exchange rate

In 1984 1 dollar averaged 2.32 yuan.

## ABBREVIATIONS FOR MAJOR SOURCES

Ag Econ Handbook	Agricultural Technical Economic Handbook Editing Committee, Nongye Jishu Jingji Shouce (Agricultural Technical Economic Handbook), Beijing, Nongye Chubanshe, May 1983.
China Ag Yearbook	He Kang, Editor and Chairman of Agricultural Yearbook Committee, Various issues published in 1980, 1981, 1982, 1983, and 1984. Zhongguo Nongye Nianjian (China Agricultural Yearbook), Beijing, Nongye Chubanshe.
China Econ Yearbook	Jiang Yiwei, Editor, Various issues published in 1981, 1982, 1983, and 1984. Zhongguo Jingji Nianjian (China Economic Yearbook), Beijing, Jingji Guanli.
China Stat Yearbook	State Statistical Bureau, Editor, Various issues published in 1981, 1983, and 1984. Zhongguo Tongji Nianjian, (China Statistical Yearbook), Beijing, Zhongguo Tongji Chubanshe.
FB or FBIS	Foreign Broadcast Information Service, Daily Report: China, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia.
JjRb	Jingji Ribao (Economic Daily), Beijing, China.
JP or JPRS	U.S. Joint Publications Research Service, China Report, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia. This report is published in three separate sections. JPE, refers to the China Report--Economic Affairs; JPP, refers to China Report--Political, Sociological, and Military Affairs; JPA, refers to the China Report--Agriculture; and JP-CRF, refers to the China Report--Red Flag.
RmRb	Renmin Ribao (People's Daily), Beijing, China.
SSB Communique	Communiques of the State Statistical Bureau of the People's Republic of China on fulfillment of China's National Economic Plans, Beijing, China's Financial-Economic Press, 1980, 1981, 1982, 1983, and 1984. These communiques are also published in RmRb and FBIS.

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